

## CHAPTER-5 MARTUNI PILOT PROJECT

### 5.1 Socio-Economical Description

#### 5.1.1 Population structure

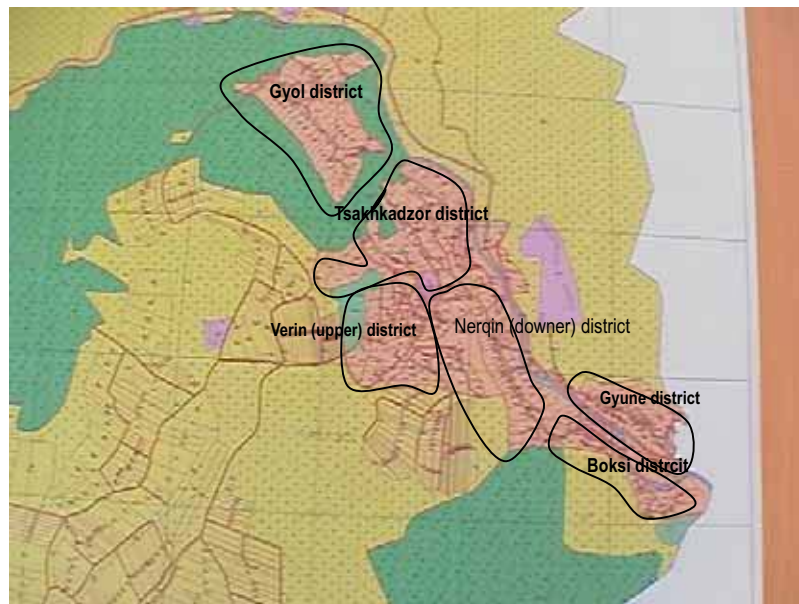
After the collapse of Soviet Union, during the last 15 years Martuni village has continuously suffered from general socio-economical crisis in the Republic and from the disaster damage. However, the temps of migration in this village are lower, than in the total Republic – and during 15 years only about 20% of population left the village. Nowadays, the population of the village is 696 people (registered in the population record journal) – 352 of them are males (50.5%) and 344 are females (49.5%). There are 198 males (28,4%) and 179 females (25,7%) of working age.



**Figure 5.1.1**  
Location Map of Martuni village

The birth rate is average – in 2004 it was about 5,7 per 1000 population (4 babies were born in the village). However, in 2005 still only one baby has been born.

The village is divided into 6 districts; the main criterion of division is geographical location.



**Figure 5.1.2** District Map of Martuni village

Also none of the districts have political representation and the population is too small for any campaign, however the districts can be divided also based on the criterion of hazards and disaster. Thus, hazard map preparation and disaster management is directly concerned with the interests of the districts and distribution of the population.

### 5.1.2 Economic Structure

#### (1) Village Budget

According to the statistics, Chambarak region is the poorest in the Republic. There are several factors for this:

(a) Firstly, it is poor geographical location and low level of agricultural production. The area is not suitable for cultivating fruits or vegetable, except potato. Other main products are wheat (in very low quantity – only 20-30ha are cultivated) and honey, which don't bring enough profit for the population.

(b) Second factor is the absence of nearby agricultural market where the product can be sold. In Soviet times kolkhozes gave a good solution to the problem – by distributing the products countrywide, and nowadays, for the villagers the individual organization of the process is a very hard and complicated job, which is rather connected to expenditures than to the revenues.

(c) Reorganization of former regions into Marzes has been devastating for distant villages. Nowadays, Chambarak town and nearby villages (including Martuni village) depend on Gavar – the Marz Center, which is located 100km away, and is often hard reachable (both in direct and figurative senses). There are 5 main town-districts in the Marz (Gavar itself, Martuni, Vardenis, Sevan and Chambarak) and being the most distant and the most isolated Chambarak usually receives the state subsidies and donations, as well as governmental projects on the last portion. Rather, Martuni village has closer social and economical relationships with Tavush Marz (Dilijan, Ijevan towns, Gosh village, etc.) than with the Marz Center.

The total budget of the village for 2004 is 3,057,000AMD (equal to app. 6,800USD). There is a certain trend of increasing the village budget, which is shown in the table 5.1.1.

According to the available data, in 2005 the budget will also be increased.

**Table 5.1.1 Budget of Martuni village for 2002 and 2004 (data for 2003 is not available)**

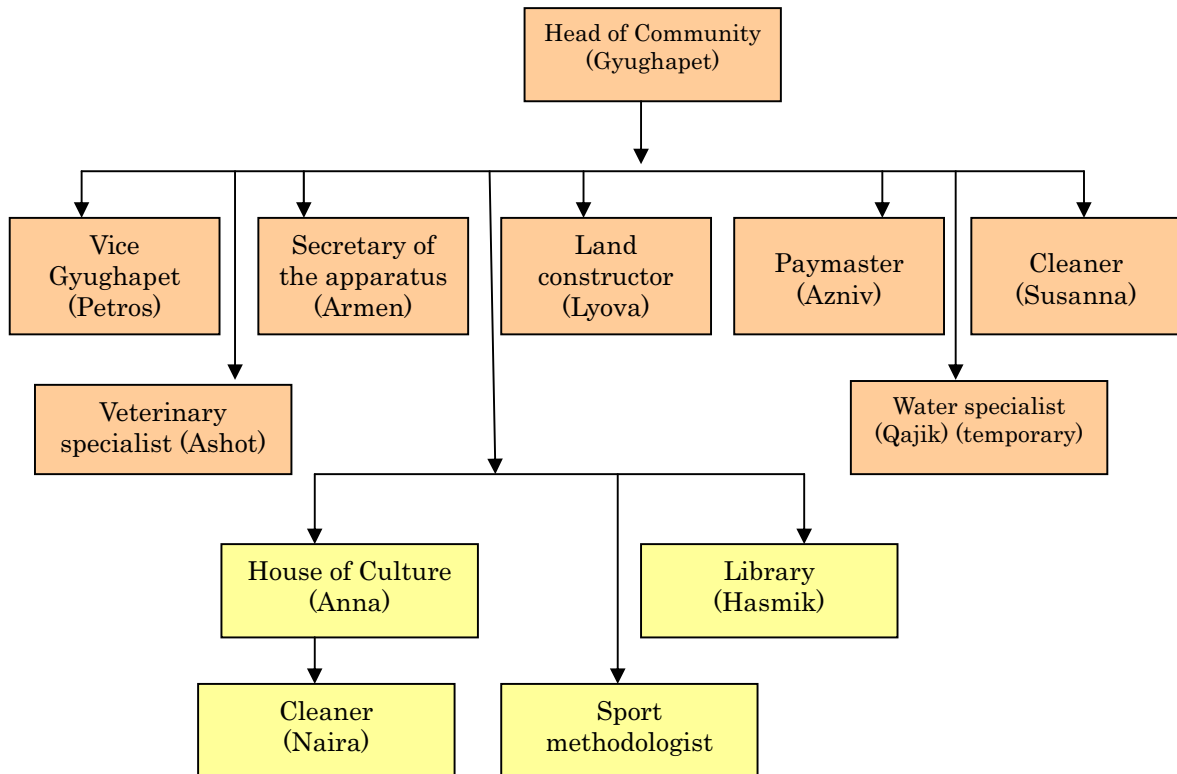
<b>Budget of Martuni village for 2002 and 2004</b>			
<b>YEAR 2002</b>		<b>YEAR 2004</b>	
<b>Revenues</b>		<b>Revenues</b>	
Land tax	737,1	Land tax	810,8
Property tax	173,5	Property tax	230,5
Land fee	22,3	Land fee	276,7
Non tax revenues	179,2	Local fees	30,0
Subsidies of the current year	436,2	Subsidies	1459,0
Subsidies of the last year	239,7	Veterinary service	250,0
<b>Total</b>	<b>1788,0</b>	<b>Total</b>	<b>3057,0</b>
<b>Expenditure</b>		<b>Expenditure</b>	
Salary	795,5	Salary	1869,4
Social payments	225,1	Social payments	706,9
Communication	15,0	Business trips	100,0
Electrical energy	29,7	Electrical energy	74,4
Economic payments	162,0	Communication	6,1
Reserve fund	35,0	Fuel and heating	140,0
		Organization of children rest	30,2
		Reserve fund	55,0
<b>Total</b>	<b>1262,3</b>	<b>Total</b>	<b>2982,0</b>

## (2) Taxes

However, only 17% of the taxes were possible to collect during the previous year. The main factor for this is the low level of the incomes of the population and barter style of trade relationships in the village. A unique system of accreditation is developed in the village (like in the most villages in the country). People buy products from the shops without paying cash – rather in special journals their debts are calculated. At the end of the month, when they receive salary or pension, or at the end of season, when they receive earnings from agricultural product selling, they pay their debts for the previous month, and so on until the next period. Thus, the population almost never owns cash. The abovementioned complicates paying of taxes. The other factor of low tax rates is poor leadership and flexible tax policy of the administration. In overall, the village population owes about 15.000.000 AMD to the administration as unpaid taxes.

## (3) Employment

The main state employment is provided by the village administration, school, post office, house of culture and electric power station. The total number of employed in all the abovementioned offices not exceeds 25-27 people – 12 persons are employed by Village Administration (Gyughapetaran) and House of Culture (for the structure see Figure 5.1.3), 8-10 persons in school, 2 persons in post office and 1 person in electric power station.



**Figure5.1.3 Structure of Village Administration (red squares) and House of Culture (yellow squares)**

There are several job places also in the private sector (cheese producing farm, shops) and a very little number of jobs provided by international organizations – mainly in the construction sphere, which, however, are completely seasonal.

There are many people from the village (at least each 5th family) has a relative employed abroad or in Armenia – in Yerevan either in other towns.

**(4) Salaries of Village Administration Staff**

According to Article 27 of the Law of Local Self Governance in Armenia;

“The salary of the Head of the Community shall be established at Up to 50 per cent to the salary of a member of the National Assembly of Armenia, for the Chief of a community having less than 1000 population.”

The population of Martuni village is about 700 people and the salary of the Head of Community is established according to this law. The average salary of a member of the National Assembly is about 350.000 AMD that means that in Martuni village Head of Community can establish his salary (which is confirmed by Village Council) at the level of maximum 175.000 AMD.

For recent three years Mr. Hovhannisyan has two times increased his salary starting from 70.000 AMD and currently his salary is at the level of 91.500 AMD. The following table represents the salaries of the village administration staff.

**Table 5.1.2 Salaries of Village Administration Staffs**

N	Position	Salary (in AMD)
1	Head of Community	91.500
2	Vice Head of Community	55.000
3	Accountant	46.500
4	Land Constructor	26.000
5	Paymaster	26.000
6	Cleaner 1	13.000
7	Cleaner 2	20.000

### 5.1.3 Organizations in the Village

The village can be described as passive in the sense of organizational structure. Actually, there are only two registered organizations in the village:

- (1) Union of Bee Holders (registered in 2003), which has 11 members and is involved in the sphere of beekeeping. However, until now this organization hasn't implemented any serious project and, being the regional branch of Marz similar organization, has once participated in the production of booklets.
- (2) Parents' Committee, which is in the process of registration as a non-governmental organization (2005). However, it functions already for 3 years, consists of 5 members and basically is involved in the sphere of village school improvement. Collaboration with CARITAS, CARS (Catholic Relief Services) and USAID has resulted the reconstruction and modern furnishing of the school cafeteria and opening of school computer center with 5 modern computers, printer, scanner and coping machine. Currently the organization is seeking sponsor to organize computer training courses for

its members and school teachers.

The village is comparatively passive also in the sense of local and international donor organizations and projects, functioning in the village.

The following is the list of organizations and projects implemented in the villager during the last several years – excluding JICA.

Except the abovementioned there are no other organizations in the village. Initially it was expected that there in the village General Assembly is working, but this is just a nominally unit which gathers together only on public events or political actions.

In overall, the village social organization can be evaluated as poor, since there are not enough level of participation and activeness. The matters for this will be discussed later in this chapter, however, here it should be mentioned, that the organizations are important factor of political participation and civic awareness of the population, and in the village this factors are still to be developed.

Establishment of Working Commission and General Assembly is one of the possible ways of doing that.

**Table 5.1.3 Organizations and Projects donating in Martuni village**

<b>Name</b>	<b>Year</b>	<b>Mission</b>	<b>Remarks</b>
Caritas	1999-2000	Food for children in the school, free cafeteria, for 2 years	
Caritas	2001	Reconstruction of cafeteria, with equipments	Small scale construction works in the school
Mission Enfance	2001	Renovation inside the school building	Small scale construction works in the school
USDA	2003	Private entrepreneurship development with Cheese factory	Establishment of a cheese farm and milk receiving point
Caritas	2004	5 computers were presented to the school	
Caritas	2005	renovation of parent’s committee room	
Médecins sans Frontières	2005	Medicines provision, training of nurses how to distribute the medicines – European standards	Came to the village in 2003 accidentally. 2 jobs opened.
“Construction of Intercommunity Roads”	2005	Reconstruction of 11km of intercommunity roads	Financed from State Budget, the project has failed and the money is not transferred so for now Gyughapet owes about 525000AMD
World Bank	2006 (expected)	20 ha wheat planting, growing, distributing among residents. reconstruction of 8 km field road 15 bee families provision planting 1500 trees 60 ha pasture fertilization fertilization of meadow land watering system for animal husbandry planting 17 ha grass for cattle	Selection of beneficiaries is made by the head of community

#### 5.1.4. Cultural Environment

Martuni villagers are the descendants of refugees from Western Armenia (current Eastern Turkey), who has escaped from 1915 Genocide. The village was established in 1920-1921, by the President of Armenia Alexander Myasnikyan Martuni (and is named after him). In those years, the current area of the village and the nearby areas were settled by Azeri nomadic shepherds, who were using rich pastures on nearby mountains. In 1936, according to Stalin's order, all the nomadic tribes were forced to settle in the certain areas, thus all the nearby areas of Martuni village were settled by Azeri people. Being afraid of loosing territory, the villagers started constructing houses without any certain plan – from the very east and very western part of the area – to protect the assigned territory. The relationships with the neighbor villages were limited only by transportation and small-scale trade. No social cohesion was available. Chambarak (former Krasnoselk) beginning from the mid of 19th century was settled by Russian religious sects inhabitants (who were forced to move to Armenia from Russia by the Czar for two reasons: first, to escape from the division inside the society, and second, to increase the number of Russian population in Armenian Province), who were mainly closed community with low level of communication with outsiders.



**Figure 5.1.4**  
**Portrait of Alexander Myasnikyan**

In 1988-1990 because of the tensioned relationships between Azerbaijan and Armenia almost all Azeri population has left their houses in the nearby villages or, which was more popular, exchanged their houses with the houses of Armenians, who were living on the territory of Azerbaijan. So nowadays, all the houses in former Azeri villages are settled by Armenians from Azerbaijan.

In all the times, Martuni village showed particular difference from the nearby villagers in social, cultural and ethnographical aspects and can be described as sustaining in a particular level of isolation. Rather, strong social relationships were available with Gosh village, which is located 28km far, but was the only village in the area settled by Armenians. Lots of marriages occurred between residents of Martuni and Gosh villages. On the contrary, until now it is viewed unusual to marry a girl from the nearby Getik village, again a settled by refugees from Eastern Azerbaijan.

Cultural isolation means that traditions and norms in the village are rather different and not

mixed with the traditions and norms of the newcomers in the nearby villagers. Martuni villagers are considered to be “different” from the surrounding villagers not only in their opinion, but also in the opinion of Chambarak citizens and international volunteers, who have experience of relationships with the Martuni villagers, and for example, Aygut villagers (nearby village, former Azeri, now settled by refugees from Western Azerbaijan).

The main peculiarities of culture can be presented in the following points:

(a) *Linguistic distinction*; Martuni villagers are the only ones in the region, who speak pure Armenian language (or, compared to Yerevan language, which is traditionally considered as a grammatical one, almost pure). All the inhabitants of the nearby villages and Chambarak have a special pronunciation – which is rather close to Karabakh pronunciation. This is viewed as a cultural phenomenon, because in the area like this, surrounded by other linguistic continuum; it is usually difficult to keep specific language, unless a certain level of isolation is present.

(b) *Male-female relationships*; woman population is more liberal in the village, than in the nearby villagers, although Armenian traditionalism and communal mentality is certainly determining the dominant norms of the relationships between genders. However, women are given more freedom in running household issues and decision making. To some extent, they are also permitted to run financial matters, which is usually a male monopoly in other nearby villages.

(c) *Funerals and ceremonies of memorizing the dead* – are slightly different from the nearby villages. Of course, its main function is gathering family together and exchanging news and ideas (remembering the dead is also a part of the ceremony), but the forms are different in villages – it can be assumed, that Martuni style is more close to the traditional Armenian one – at least in the opinion of the villagers themselves. In overall, this types of ceremonies are oriented towards the living rather, that towards the dead, and that means that interpersonal relationships are really very important here. These events are traditionally places where rumors, news, ideas, thoughts can be exchanged and for one meeting to another life goes in the direction, which should be verbally analyzed and presented on these occasions.

(d) *Feeling of motherland* has a specific manifestation among the community inhabitants. When the refugees established this village, they had certain purpose and intention to go back to their houses in Western area. They were sure that they are staying here temporarily and that is why didn't maintain to construct permanent houses. Until 1950s there were living in slums, and sand-made houses. During the war time there were sure that Stalin will



invade Turkey and take their lands back and their will return there. And only after the WWII was ended, and moreover, after Stalin's death in 1953 people realized that there are going to stay in this village for longer period then they expected and decided to construct houses. So it should be concluded, that *the new era in Martuni village has started in 1950s and the main factor of that was the realization that this place is going to be there home. That feeling was missing before that.*

However, nowadays the feeling is rather developed in the village. Almost all the respondents mentioned as a reply to the question about what they like most in the village the fact, that this is their motherland and the major part mentioned, that would not like to leave the village, even in the case of prevailing disasters. They rather would like to be resettled to a safer area in the village, than to completely leave the village.

However, this can not be stated to the younger generation. Majority of young people would leave the village if there is an opportunity to settle in the cities like Ijevan, Dilijan or, certainly, Yerevan. But this fact is normal for the village type communities in Armenia. During Soviet period and furthermore, this tendency of village-city migration was always present in the country. But the lack was met with the high birth-rate – each family had 4-5 children in the villages and if 2 of them were leaving to the city, village was still increasing in population. Nowadays, when the average number of children is 2-3, the gap because of rural-urban migration can not be compensated.

### **Cultural context**

The following chapter is determined to examination of local culture in the terms of community initiative and level of participation. This is important first, from the point of view of the current project implementation, and second, from the point of view of further maintenance and supervision of the installed equipments.

After the collapse of Soviet system, kolkhoz and sovkhoz economy, in the beginning of 1990s and up to the current times Armenian villages are left to de-facto and de jure self governance. Except huge volume of freedom this self governance also means huge responsibility of decision making and action implementation. However, being brought up in the social system of centralized governance, communities show very little (or sometimes complete absence) of potential for taking initiatives for decision making and action implementation.

The above-described situation finds it practices also in the Pilot Project of JICA Study Team in Martuni village.

### **Observation and Evaluation**

The followings can be distinguished as the main obstacles of Pilot Project implementation:

- (1) Absence of culture of negotiations and realization of duties and obligations. From one side village (through its representative – Head of Village) has signed a contract
- (2) Dissatisfaction of basic human needs and importance of their satisfaction. It is well known, that Chambarak region is one of the poorest in Armenia, where very little number of projects are implemented, and where there is very high level of unemployment. Because of poor geographical and meteorological conditions and because of technical difficulties (absence of agricultural machines, absence of a market for sale of agricultural goods) agriculture also is little developed. In these terms the living standards of the population are very low. Some families do not have any source of monetary income, especially from October to April (in summer agriculture makes a little capital, however). Extreme poverty brings lots of problems and one of the main results is *domination of individual prosperity over communal prosperity*. On the practical level this means a pyramid of needs, where basic human needs – on the its basis – remain unsatisfied. Communal needs – such as love towards mother land, communal identification, and communal prosperity in general – are left on the second stage. On the theoretical level this means that villagers understand the process of community development as a process from one to the whole – if discrete families will live better, then the community will live better and not if community will improve, the life of discrete families will also improve. Individual (family) prosperity is a condition for communal prosperity, not a result.
- (3) All is rooted into money.

### **Report on the Elections in Martuni village**

#### **History**

Elections in Martuni village were held on October 23<sup>rd</sup>, 2005, on Sunday. First to mention, the elections were different from the same type of events in Armenia mainly by the fact that there was only one registered candidate

#### **Results**

The total population of Martuni village is 720 registered people, out of the 419 have the right of voting (Those, whose age is higher than 18 and who are not passing their army service at this time). The results of the elections are given in table5.1.4:

**Table 5.1.4 The Results of Election in Martuni village**

<i>Election results</i>	<b>people</b>	<b>% of voters</b>	<b>% of those, who have right to vote</b>
Total population	720	-	-
From which			
Have right to vote	419	-	100%
From which			
Participated in Elections	284	-	<b>67,7%</b>
From which			
<b>For</b> <i>Vahram Hovhannisyan</i>	273	<b>96.1%</b>	65,1%
<b>Against</b> <i>Vahram Hovhannisyan</i>	10	<b>3.6%</b>	2,4%
Invalid	1	<b>0.3%</b>	0,2%
Did not participate in elections	135	-	32,2%

Thus, 67.7% of those, who have right to participate in elections have participated in elections and 96.1% of them have voted for Mr. Vahram Hovhannisyan. There are several reasons about the voting for or against Mr. Hovhannisyan.

The pro reasons can be described as follows:

1. Mr. Hovhannisyan is the first ever village leader, who could get international project into the village, that is JICA Study Team's project on landslide management in the village.
2. Mr. Hovhannisyan has very mild policy towards those, who don't pay taxes. That is probably the reason, why the tax collecting rate is only 17% one of the lowest in Gegharkunik Marz.

## **5.2 Formulating of Community Initiative Mechanism**

### **(1) Workers' Motivation and its Issues**

During our work in the community we faced some issues regarding the motivation of workers and their payment for small scale construction works in the village. As it turned to be, one of the main motives for their working was salary – the monetary payment for their participation. Since the sum - 1200AMD/day - was very small one, we constantly explained the workers about the purpose of Pilot Project and about the necessity of community input. We described, that the project among other is also aimed to initiate community initiative, and since this is a construction work, and the only more or less valuable input from the villagers can be their labor - it is very important to participate in this kind of project with low payment level.

However, the villagers showed very little level of participation and input and after once month period of construction works, when the first contract period has finished, 6 out of 10 workers didn't want to extend their contracts until the end of the works.

Shortly, the following can be described as the reasons for such kind of behavior.

1) Village is poor, and there are very limited job opportunities in the village, so the villagers are very eager to find more or less profound job, to be able at least to cover living costs and elementary shopping in the community.

2) JICA Study Team Pilot Project was first ever international project, implemented in the village, which was based on the idea of community input. So neither Village Administration representatives nor the common villagers had enough experience to understand the necessity of community input and to have this input (this is a good reason, to compare the process of construction works and community input level in Martuni and Gosh communities).

3) Very deep rooted Soviet mentality (theoretically described features of Homo Sovietikus), when the community work motivating mechanisms had lots of faults. Working for community, for free and just for prosperity of community is still regarded as senseless work, which will never adequately evaluated.

However, we could find some persons, who could understand the necessity of voluntary work and input their participation.

Regarding working hours and involvement in the work – we also faced some problems. For majority of workers 8 hours of work day was something very new and strange and practically impossible to show. Often we found out that they were missing from work places, or were working for incomplete work day. To clarify this situation the possible reasons can be mentioned:

- 1) The salary was really very small, and to demand 8 hours of constant hard work from the non-professional villagers would be practically impossible.
- 2) The contract basis of the work for villagers contradicted with the volunteer work they intended to do. Before the start of the works many villagers expressed their will to participate in the works. However, they didn't expect that this work will be based on contract basis, they thought that volunteer work means participation once or twice in a time – thus, very limited contribution.
- 3) One factor of the negative impact on community will was noticed in the framework of Pilot Project, when the Contractor Company, which was doing drilling works in the village – hired villagers for non-skilled labor purposes and was paying 1500-2000AMD per day. So many villagers very disappointed with this unfair distribution.

## **(2) Working Commission Activities**

### **Establishment**

Working Commission (WkC) in Martuni village was established in on July 2005. The preliminary selection of candidates was done based on the request to the Head of the Community – to select 2 persons from the Village Administration and 3 more active villagers. JICA Study Team members claimed also if possible gender and social status distribution in selection of the members. Thus, the following members were selected for the first session and have participated in 3 following sessions also:

**Table 5.1.5 Working Commission Member**

<b>No.</b>	<b>Name</b>	<b>Age</b>	<b>Gender</b>	<b>Position</b>
1	Armen HAMBARDZUMYAN	24	M	LSG, Village Administration accountant
2	Lyova JARAHYAN	48	M	LSG, Land Usage and Construction specialist
3	Anna MELKUMYAN	48	F	Head of House of Culture
4	Sahak HARUTYUNYAN	42	M	Private agricultural entrepreneur
5	Tigran KAZARYAN	35	M	Private agricultural entrepreneur

The first three sessions of Working Commission were held with those persons.

The other members joined the WkC discussions after the General Assembly 1<sup>st</sup> session, when some active villagers expressed their will to participate in the WkC sessions. Three members initially expressed their initiative – but one of them didn't want to join afterwards, when it was explained to him, that there is no payment for the participation. Some other members joined to the WkC based on JICA Study Team member's information and Community Head's request. The other members are the following:

**Table 5.2.1 Additional Member for Working Commission**

No.	Name	Age	Gender	Position
6	Artur ASATRYAN	42	M	Private agricultural entrepreneur, farm owner
7	Never SENEKERIMYAN	39	M	Villager, Martuni village
8	Hayk HOVHANNISYAN	49	M	Villager, Martuni village
9	Andranik GEVORGYAN	38	M	Villager, Martuni village
10	Ashot MURADYAN	43	M	Villager, Martuni village
11	Ashot ZADOYAN	35	M	Villager, Martuni village

### **Sessions Frequency of WkC**

In average, WkC sessions were held once in 12 days. Certainly the frequency depended on the necessity of discussions – like adequate topics, further project implementation, etc., however, other factors also were considered, like the level of work pressure.

### **WkC History**

Working Commission was established on July 1<sup>st</sup>, 2005 by JICA Study Team members, implementing Pilot Project in Martuni village.

Since that and up to the end of Pilot Project in Martuni village on Dec 7, totally 12 sessions of Working Commission were held in the village. The following table indicates the frequency, content and decisions made in WkC sessions.

**Table 5.2.2 Content of Working Commission Sessions**

Working Commission Session	Date	Number of Participants	Topics Discussed
First Session	July 1 <sup>st</sup> , 2005	9 persons	<ol style="list-style-type: none"> <li>1. WC establishment, opening speech</li> <li>2. Introduction of WC, structure, missions and functions</li> <li>3. Explanation of necessity and goals of Geological Survey in Martuni village and the schedule of works</li> <li>4. Explanation of necessity and goals of Social Survey in Martuni village and the schedule of works</li> <li>5. Clarification of villagers' input and the tentative schedule of Pilot Project works</li> </ol>

<b>Working Commission Session</b>	<b>Date</b>	<b>Number of Participants</b>	<b>Topics Discussed</b>
Second Session	July 13 <sup>th</sup> , 2005	7 persons	<ol style="list-style-type: none"> <li>1. Confirmation of cooperation between JICA Study Team, Gyughapetaran and Working Commission</li> <li>2. Presentation of scheduled work for next 2 weeks, preparation of Hazard Map and Countermeasure Plan of Martuni village</li> </ol>
Third Session	July 21 <sup>st</sup> , 2005	10 persons	<ol style="list-style-type: none"> <li>1. Presentation of the mission of Working Commission to work on Three-Year Development Plan of Martuni village, introduction to the purpose of Social Survey. Explanation of principles and importance of self-assistance for the plan development</li> <li>2. Presentation of draft Hazard Map of Martuni village, report of 4 disaster types in the village</li> <li>3. Discussions of Hazard Map and its details, addition of new information about history and places of landslides in the village</li> <li>4. Presentation of differences between risky and active landslides and the main purpose of pilot project to conduct small scale countermeasure works in the large landslide area in the village, based on the results of monitoring equipments</li> <li>5. Discussions on further collaboration of JICA Study Team and Working Commission</li> </ol>
Fourth Session	August 4 <sup>th</sup> , 2005	9 persons	<ol style="list-style-type: none"> <li>1. Discussions of the ways to increase the level of participation and interest of Working Commission members in Working Commission sessions (change of meeting time, ways of contacting and informing, ways of involvement, participants, etc.)</li> <li>2. Presentation of the final version of Hazard Map with the modified and added information. Presentations of the places of 8 landslides, 3 mud flow areas and water flow area in the village</li> <li>3. Presentation of the detailed and complete Countermeasure Plan of Martuni village. Introduction of the purposes of Countermeasure Plan and JICA Study Team's role in the implementation of only one, the most important countermeasure. Explanation of mechanism of open ditch drainage culvert and horizontal drilling countermeasures</li> <li>4. Identification of the first priority landslides in the area and first priority countermeasures, which should be constructed by JICA Study Team Identification of open ditch drainage culvert near the road as the most important and necessary countermeasure</li> <li>5. Presentation of the future schedule of JICA Study Team and Working Commission. Explanation of the necessity to discuss the priority countermeasure plan with the villagers (during General Assembly), with Advisory Committee members, after which the contract should be signed about the work implementation. Explanation of the agreement necessity, signed by Village Council members</li> </ol>

<b>Working Commission Session</b>	<b>Date</b>	<b>Number of Participants</b>	<b>Topics Discussed</b>
Fifth Session	August 26 <sup>th</sup> , 2005	10 persons	<ol style="list-style-type: none"> <li>1. Presentation of water volume and water springs survey results and detailed description of water circulation in the village</li> <li>2. Presentation of meteorological data on Martuni village and discussion with the members. Presentation of the impact of meteorological conditions on landslide</li> <li>3. Presentation of the goals, objectives, methods and schedule of sociological survey in Martuni village. Discussion of the expected results</li> <li>4. Farewell ceremony of Mr. Ito, gift of books and chess to the House of Culture and gift from the WC members</li> <li>5. Distribution of Landslide newsletter to the participants</li> </ol>
Sixth Session	September 8 <sup>th</sup> , 2005	10 persons	<ol style="list-style-type: none"> <li>1. Presentation and discussion of Social Survey results, clarification of the Report</li> <li>2. Discussion of the directions of village development based on survey results, and suggestion of own ideas</li> <li>3. Introduction to technical coordinator – Mr. Bodoyan. Report on vertical drilling and topographic survey works, presentation of the schedules of works</li> <li>4. Introduction to September 29 seminar, selection of a participant, who will hold a speech and make a presentation</li> <li>5. Selection of WC next chairman – a village resident</li> <li>6. Identification of houses damaged by landslide on the map, based on 1999 categorization</li> <li>7. Risk and Resource map preparation</li> </ol>
Seventh Session	October 5 <sup>th</sup> , 2005	18 persons	<ol style="list-style-type: none"> <li>1. Meeting with JICA Study Team members</li> <li>2. Start of construction works: procedure and implementation, schedule, maintenance, etc.</li> <li>3. Countermeasure General Plan discussions</li> <li>4. Further execution of social part of the project</li> </ol>
Eighth Session	October 13 <sup>th</sup> , 2005	12 persons	<ol style="list-style-type: none"> <li>1. Hazard map preparation and finalization</li> <li>2. Discussions of the Village Development Plan preparation procedure</li> <li>3. Industry and Infrastructure Development Plan and their components</li> <li>4. Questionnaire fill in for the Industry and Infrastructure Development Plan possible directions</li> <li>5. Slogan contest and Martuni slogan preparation</li> <li>6. Culture Development – brainstorming</li> <li>7. JICA Study Team members private contribution and discussions of the possible ways</li> </ol>
Ninth Session	October 19 <sup>th</sup> , 2005	11 persons	<ol style="list-style-type: none"> <li>1. Priority of landslide countermeasures and necessity of the prioritization</li> <li>2. Brain storming about the directions of village industry and infrastructure development</li> <li>3. Discussions on the progress of small scale countermeasure construction works</li> <li>4. Preparation of meeting on October 25<sup>th</sup></li> </ol>
Tenth Session	October 25 <sup>th</sup> , 2005	21 persons	<ol style="list-style-type: none"> <li>1. Meeting with JICA HQ representatives and JICA Study team members</li> <li>2. Presentation on Martuni Community history and current situation</li> <li>3. Presentation on Pilot Project implementation and small scale countermeasure construction works</li> <li>4. Discussions and site visit</li> </ol>



<b>Working Commission Session</b>	<b>Date</b>	<b>Number of Participants</b>	<b>Topics Discussed</b>
Eleventh Session	October 26 <sup>th</sup> , 2005	10 persons	<ol style="list-style-type: none"> <li>1. Discussion of results of the meeting with JICA HQ and JICA Study Team representatives</li> <li>2. End of discussions of Industry Development Plan in the Community</li> <li>3. Start of discussion of Infrastructure Development Plan in the Community</li> <li>4. Discussions on countermeasure plan</li> <li>5. Mapping of the damaged houses (joint discussions)</li> </ol>
Twelfth Session	November 17 <sup>th</sup> , 2005	14 persons	<ol style="list-style-type: none"> <li>1. Establishment of landslide monitoring group: current and future work schedule</li> <li>2. Disaster prevention plan discussion in Martuni village</li> <li>3. Priority landslides and future plans of management</li> <li>4. Game room renovation and installation of drinking water pipeline in the school</li> </ol>
Thirteenth Session	December 21 <sup>st</sup> , 2005	13 persons	<ol style="list-style-type: none"> <li>1. Meeting with JICA HQ representative and representative of the Embassy of Japan in Russia</li> <li>2. Pilot Project implementation and outcomes</li> <li>3. Grass Root Project Application procedure discussions</li> <li>4. Discussions and site visit</li> </ol>

### **Attendance**

The level of attendance of WkC members to the WkC sessions can be evaluated as average. Here are some reasons of high attendance of the members:

- 1) when the topics were interesting,
- 2) when the topics were connected to their everyday life – were realistic.

### **Level of Participation**

To understand the factors, that determine the level of participation of villagers in WkC session, it is necessary to penetrate into the content of former Soviet times and post-soviet meetings, which have been usually held in the village communities.

### **WkC in the Future**

It is very difficult to state, that the WkC will continue holding meetings also in the future, after JICA Study Team's Pilot Project finishes in the village. However, several steps were taken to establish WkC as an independent unit, which will be able to hold meetings and makes the necessary decisions. Here is a short outline of those steps:

1. Selection of the constant members of WkC. It was explained to WkC members in details what was the purpose of establishment and why exactly those people were selected – to represent both LSG and population. Selection of those particularly people was based on the fact that they are among the most active and the most informed people in the community who are capable of setting village developments and proposing possible projects to the village head, village council and external bodies. Thus, attempt was taken to show then that

there are selected as the key persons in this project, but not only for this project, but for further consulting and possible projects also.

2. Election of Chairman of WkC. It was decided to elect a chairman of WkC, which will be afterwards trained for organizing WkC sessions. Actually only one person – Mr. Hayk Hovhannisyan expressed his will to be elected for that position and all members vote for him. Mr. Hovhannisyan is the elder brother of the Head of the village, and it should be admitted, that kin relationships are still very important for village type communities, when deciding about the managerial positions. Thus, it's not of a surprise that everybody supposed Mr. Hovhannisyan to become a chairman of WkC, although this position is not paid one and not of high authority. On the other hand, Mr. Hovhannisyan was also construction assistant for small scale countermeasure works in the village, and it was thought, that he is well informed about the implementation of the project.

## (2) General Assembly

General Assembly consists of the active villagers – the breadwinners and the people who are aware of village problems and can express their opinion on village development. Initially it was planned to gather up to 50 participants for the General Assembly sessions. So far 3 sessions of General Assembly have been held in the village, and the maximum number of participants doesn't exceed 32. There are several reasons for low level of participation, which can be summarized as follows:

- 1) End of summer and beginning of autumn is traditionally the busiest time for the villagers – they all work in the farms, gather grass, transport the grass, produce honey, etc. So usually they finish the working day late at night and are too tired to come to the meeting. Several times the meetings were held in the late evening, at 9:00pm or 9:30pm, but the level of participation, was still not high that average.
- 2) Second reason is the absence of interest in landslide management issues, especially of those people who do not live in the landslide area. Even various means of informing the people – such as information papers on the most attended places (in front of Village Administration building and the shop), telephone calls, personal invitations often are not enough to bring the people to the meeting room. Individual problems seem to prevail over the community development general will of the villagers. Apparently, this has its reasons, which will be discussed later in this chapter.

The following table represents the main issues discussed during the three General

Assembly meetings held in the village:

**Table 5.2.3 Content of the Meetings of General Assembly**

<b>General Assembly meeting</b>	<b>Date</b>	<b>Number of Participants</b>	<b>Topics Discussed</b>
First Meeting of General Assembly	July 25 <sup>th</sup> , 2005	32 persons	<ol style="list-style-type: none"> <li>1. Introduction to the goals and missions of the Pilot Project</li> <li>2. Discussion of the importance of community initiative and self assistance</li> <li>3. Discussion of community input in landslide management pilot project</li> <li>4. Introduction of the necessity of geotechnical and sociological surveys</li> </ol>
Second meeting of General Assembly	August 9 <sup>th</sup> , 2005	30 persons	<ol style="list-style-type: none"> <li>1. Presentation of Hazard Map of Martuni village and discussion of the disaster areas</li> <li>2. Presentation of countermeasure plan of Martuni village</li> <li>3. Discussion and selection of the most prior countermeasure are in the village and decision upon the implementation of the landslide management small scale countermeasure.</li> </ol>
Third meeting of General Assembly	September 15 <sup>th</sup> , 2005	25 persons	<ol style="list-style-type: none"> <li>1. Information about the start of construction works in Martuni village</li> <li>2. Village infrastructure development issues and discussions of the concept plan landslide management and community infrastructure development</li> <li>3. Discussions of the matter of construction disposals and the places where they should be settled</li> <li>4. Discussions of the possible ways of village development</li> </ol>
Forth meeting of General Assembly	October 27 <sup>th</sup> , 2005	26 persons	<ol style="list-style-type: none"> <li>1. Information about landslide countermeasure construction works</li> <li>2. Possible directions of project development in Martuni village</li> <li>3. Information and discussion about village Industry Development Plan</li> <li>4. Information and discussions about village Infrastructure Development Plan</li> <li>5. Information and discussions about landslide countermeasure prioritization</li> </ol>

### 5.3 Conceptual Plan for Community Development

#### (1) Initial Social Survey

To evaluate the community needs on the primary stage social survey was conducted with the villagers. 30 families were included in the survey sample, and the sampling was done in a way to include all the 6 districts in the village.

#### (2) Discussions with the Head of the Community

Next stage of the Community Development Plan preparation is the discussions with the Head of the Community. According to the Law of the Republic of Armenia on Local Self-Government;

“The Head of Community shall elaborate the community three-year development program, which he shall submit for the approval of the newly elected Community Council within a period of three months after the latter has assumed its office.”

The Head of the Community, Mr. Vahram Hovhannisyan has been re-elected on October 23<sup>rd</sup>, 2005. The new elections of Village Council will be held in February, 2006. So according to the law, the Head of Community should prepare the three-year development program until January 23<sup>rd</sup>, 2006.

Taking into consideration the fact, that the Pilot Project in Martuni village was ending earlier – in December, 2005, JICA Study Team members asked the Head of the Community to prepare the document until the end of November. We agreed to assist him with the selection of the priority issues. So the following procedure was set as community development plan preparation:

**Table 5.2.4 Community Development Plan of Martuni Village**

No.	Code	Count	Responses	Cases	Priority
1	Water drainage system	6	9,4	19,4	V
2	Water removal system	12	18,8	38,7	II
3	Agricultural machines	9	14,1	29,0	III
4	Social issues and unemployment	16	25,0	51,6	I
5	English teacher in the school	1	1,6	3,2	
6	River concrete wall	3	4,7	9,7	VI
7	Intercommunity roads renovation	2	3,1	6,5	
8	Emigration issues	2	3,1	6,5	
9	Drinking water pipelines modification	1	1,6	3,2	
10	Market for products realization	2	3,1	6,5	
11	Landslide prevention	8	12,5	25,8	IV
12	High interest rates of short term credits	1	1,6	3,2	
13	Damaged houses	1	1,6	3,2	
	Total responses	64	100,0	206,5	

**Table5.2.5 (a) The SECOND draft for INFRASTRUCTURE Development for items of high viability  
- For Actions to be Taken -**

Categories	Detail Items	Viability/ Urgency	For items of high viability:	Necessary actions	Contribution by community	External Aid needed
			Resources/items needed			
<b>1. Land use</b>						
<b>2. Roads</b>	Intercommunity roads are in very bad condition and need urgent renovation					
<b>3. Water removal system installation</b>	The most important issue, one of the reasons of landslide (realized by the villagers) important for the hygienic conditions and also for the intercommunity roads	<b>first prior</b>	Survey			<b>yes</b>
			Planning			<b>yes</b>
			Pipelines			<b>yes</b>
			Construction materials			<b>yes</b>
			Labor		<b>partly</b>	<b>1200AMD/day</b>
			Further monitoring		<b>yes</b>	
<b>4. Continuation of open ditch construction, draining the line to the river</b>		second prior				
<b>5. Installation of drinking water pipeline to the school</b>						
<b>6. Cultural house renovation</b>						
<b>7. Game room renovation</b>						
<b>8. English language teacher in the school</b>						
<b>9. Game room renovation</b>	In the village no leisure place is available. There is an area that can be renovated and used for spending free time.	third	Renovation materials		<b>yes</b>	
			Table tennis, chess, nardi etc.		<b>yes</b>	
			Procurement and transportation			<b>yes</b>
			Renovation work labor			<b>yes</b>
<b>10. Construction of Mini Hydro-Power Station on Getik River</b>						
<b>11. Renovation and procurement of sport equipments</b>						

**Table5.2.5 (b) The SECOND draft for INDUSTRY Development for items of high viability - For Actions to be Taken -**

Categories	Detail Items	Viability/ Urgency	For items of high viability:			
			Resources/items needed	Necessary actions	Contribution by community	External Aid
<b>1.Agriculture</b>						
<b>a) Cropping/Planting</b>						
wheat cultivation	there is lots of free land available in the village where it is possible to crop wheat but because of the absence of agricultural machines (first of all combine) about 15-20ha of Twice a year it is possible to use the land, in spring and in autumn.	very important for the feeding of the villagers and cattle	300 ha land 100t of seeds Combine	twice cultivation  agricultural technology is necessary for cultivation	<b>yes</b>	<b>yes</b> <b>yes</b>
			mill for cropping containers for keeping area for preserving			<b>yes</b> <b>yes</b>
Sugar cane	Sugar has a very good demand in Armenia. From cultivation additional wastes are available, which can furthermore be used for pig-breeding and cattle-breeding, since it is proved to raise the level of milch of cows.	second	200 ha land about 4t of seeds mill for processing sugar from cane sugar juice Labor Storage pit Market	cultivate purchase to establish a mill for getting sugar from cane to reproduce into sugar to cultivate to preserve marketing	<b>yes</b> <b>yes</b>	<b>yes</b> <b>yes</b> <b>yes</b> <b>yes</b>
Potato production	In the village lots of land and good weather conditions are available for potato production the main issue regarding to the development is absence of market for sale of the harvest	third	200 ha land 600 tons Fertilizers toxics against insects sowing machines harvesting machine Labor		<b>yes</b> <b>300 t</b>	<b>yes</b> <b>yes</b> <b>yes</b> <b>yes</b>
Barley cultivation		forth	300 ha land 100t of seeds Combine	twice cultivation  agricultural technology is necessary for cultivation	<b>yes</b>	<b>yes</b> <b>yes</b>
			mill for cropping containers for keeping area for preserving			<b>yes</b> <b>yes</b>

Categories	Detail Items	Viability/ Urgency	For items of high viability:			
			Resources/items needed	Necessary actions	Contribution by community	External Aid
Artichoke	Produced artichoke can further be processed into sugar, which has a good demand all over Armenia and can be sold anywhere	fifth	20 ha of land		yes	
			60 tons of seeds			yes
			Fertilizers			yes
			toxics against insects			yes
			sowing machines			
			harvesting machine		yes	
			Labor		yes	
Millet cultivation	This is good for vegetable oil production and furthermore can be reprocessed into oil and sold all over Armenia (good market is available) Also good for drying oil production	sixth	30 ha land	twice cultivation	yes	
			1,5t of seeds		yes	
			Combine	agricultural technology is necessary for cultivation		yes
			machine for reprocessing into oil			yes
			containers for keeping			yes
			area for preserving		yes	
Herb cultivation		seventh	Nettle		yes	
			Thyme		yes	
			Mint		yes	
			technologies		yes	
			Valerian		yes	
			chamomile		yes	
			drying apparatus			yes
			Elevators			yes
Labor		half	half			

Categories	Detail Items	Viability / Urgency	For items of high viability:			
			Resources/items needed	Necessary actions	Contribution by community	External Aid
<b>b) Animal Husbandry/ farming</b>						
cattle (neat)						
bee-keeping						
Sheep-keeping						
Goat keeping						
pollen production	In the fields around the village lots of useful flowers grow, and since honey cultivation is well developed in the village, it is possible to develop also pollen production. This product is very useful and can be used in medical purposes. The average price for 1 kg of pollen is 60-80 USD. First year the village can export 5 t of product, but then can increase the production up to 10 t.	<b>first</b>	installation of equipments	including honey boxes, special		
			Mareking	it is necessary to study foreign markets for demand, because local Armenian market is very small		
<b>c) Food Processing Factories</b>						
Meat producing factory						
Potato starch producing factory						
Milk producing factory						
Flavor mill						
<b>d) Other factories</b>						
grass flavor factory						
factory of producing wool						
bee houses production center						
sugar producing factory						
<b>e) Tourism</b>						
Route to "Red Church"						
<b>d) other</b>						
Teacher of English language in the school						
Computer Literacy free lessons organization						
Library restoration						



**REPUBLIC OF ARMENIA**

**GEGHARKUNIK MARZ**

**THREE YEAR PROGRAM**

**OF THE SOCIAL ECONOMIC DEVELOPMENT**

**OF MARTUNI VILLAGE COMMUNITY**

**FOR THE YEARS 2006 -2009**

**(Concept Plan of Community Development and Landslide  
Management)**

**Author – Vahram Hovhannisyan, Head of Community**

**Supported by Japanese International Cooperation Agency (JICA)  
Study Team**

**Approved on the \_\_\_\_\_ Session of the Village Council**

## Martuni 2005

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- sport methodologist – 1 wage

Community subordinate organizations include:

House of Culture

- Director – 1 wage

Library

- Librarian – 1 wage

The total number of employees in the office and in the subordinate organizations is 12. The structure of the apparatus of the Head of Community and subordinate organizations is given in the Appendix 1.

Community Council consists of 5 members.

### Physical State of the Community Property Items

The List of the Items under Community Ownership is declared according to the Resolution №51 from 14.03.1997 of the Government of the Republic of Armenia and includes the following (see Appendix 2)

- House of Culture – 1 unit
- Library – 1 unit (is located in the House of Culture)
- Monument – 1 unit
- Administrative building – none, is located in the House of Culture
- Intercommunity System of Water Supply – 7km
- Intercommunity System of Gas Supply – exist, but does not function
- Roads and streets of intercommunity significance – 25km
- Intercommunity bridges – 6
- Cemetery – 1

Because of the economical degradation the physical state of the items under community ownership has become worse. Because of the lack of spare parts and putties agricultural techniques and instruments are in the poor state. Intercommunity network of drinking water supply was constructed in 1980. Deterioration is not very high, waste of water is about 20%.

Road infrastructure should be reconstructed. Nowadays, 25km of roads and streets need reconstruction.

### Preservation of the Environment

Scavenging is done 100% individually.

Supply of drinking water currently is sufficient.

The village is in the landslide area. Threats also are possible from water floods.

### Natural Economy

There are 130 households in the community in total \_\_000m<sup>2</sup>. More than 20 of the families are either

do not have houses or are uncovered and this number increases from year to year. Because of landslides there are lots of houses in semi-emergency or emergency condition, and because of economical crisis these houses can not be renovated.

## Land Usage

Administrative area of the community is 2050ha from which 567,8ha is a state reserve foundation. The rest is distributed in the following way:

Land Usage	Type of Land	Total	Private lands	Community property lands	State property lands
<b>Agriculture lands</b>	Arable	216	203	13	
	Hayfields	209	205	4	
	Pastures	706		706	
	Other lands	42		42	
	Total	1173	408	765	
<b>Residential lands</b>	Residential (household lands)	48	48		
	Public buildings lands	0,8		0,1	0,7
	Common Usage lands	9,4		9,4	
	Other lands	10,5		10,5	
	Total	68,7	48	20	0,7
<b>Industry lands</b>	Agriculture Industry	9,3		9,3	
	Bowels land	20		20	
	Total	29,3		29,3	
<b>Energetic, transport, communal infrastructure objects</b>	Energetic usage lands	0,1		0,1	
	Transportation usage lands	3,7			3,7
	Communal infrastructure lands	0,1		0,1	
	Total	3,9		0,2	3,7
<b>Special protection lands</b>	Historical and cultural	20,9		2,4	18,5
	Total	20,9		2,4	18,5
<b>Forestry</b>	Forests	182,2			182,2
	Total	182,2			182,2
<b>Water area</b>	Rivers	4,1			4,1
	Water channels	0,1		0,1	
	Total	4,2		0,1	4,1
<b>Total lands in the village area</b>		1482,2	456	817	209,2

## Agriculture

Community mainly cultivates wheat, barley, potato, cabbage and other vegetables. Cultivation of the mentioned goods highly depends on the nature whims. If during rainy seasons it is possible to gather harvest, during years of droughts villagers use up to 40-50% of their harvest.

Those, who are involved in cattle-breeding produce milk, meat, wool and honey. For cattle breeders during droughty years there are problems for organizing the early life of cattle.

## Education

There is one secondary school in the village, which has been renovated recently and is in a good situation. There are 120 pupils studying in the school. There are 22 jobs available in the school and the teacher/pupil proportion is  $\frac{1}{4}$ .

# Project 1

## Foundation of Flour Mill

### Description and Substantiation of the Project

Since there are no equipments and factories for wheat processing in Chambarak Region, the process of treating the harvest and provision of the ready product – flour to the population is very difficult. The community always stays in the role of the consumer of flour. This project is designed for foundation of mini flour mill (productivity is 5t/day), which is sufficient both for Martuni community and for the other villages in the region.

### Purpose and Objectives of the Project

Main objectives of the project are:

- To create limited job opportunities to increase the level of employment in the village;
- To use completely the wheat cultivation lands, which now are not being cultivated by the villagers and continuously become in abandoned lands;
- To sell the received product in the region; this will have the cheaper price (considering low transportation costs) and will bring some benefit to the village.

To implement the Project it is necessary to solve some important objectives:

- To find and to apply to local and international donor organizations which will be able to provide 22mln AMD (~50.000 USD) for the foundation of flour mill; from its side the community is ready to have an input by construction machines and by labor;
- To provide the available are for the installation of flour mill;
- To find suppliers of wheat and a market for realization of the ready product first of all in Chambarak region;
- To form a personnel and mechanisms of income generation.

### Expected Project Output

- Opening of job opportunities in the village;
- Efficient usage of cultivation lands;
- Provision of cheap product.

## Project 2

### Installation of Water Removal System

#### Description and Substantiation of the Project

Since its establishment Martuni village have never had water removal system, resulting domestic waters to flow under residents houses and gardens. Often these waters do not reach the river and pass under the ground. It is well known that one of the main reasons of the active landslides in the area of Martuni village is underground water. That is why it is very necessary not only removal of water from the underground but also prevention of the risk of water flowing underground. Thus, this project is designed to install domestic water removal system in the most landslide-risky areas of the village. It is supposed that this system will be constructed in a way to make it possible to attach also sewerage system in the future.

#### Purpose and Objectives of the Project

Main objectives of the project are:

- To construct domestic water removal system with 2km of total length in the most landslide-risky areas of the village – to remove the water into the river;
- To construct private water removal systems attaching them into the common water removal system.

To implement the Project it is necessary to solve some important objectives:

- To identify the most landslide-risky areas and to prepare a plan of water removal system installation;
- To find and to apply to local and international donor organizations which will be able to provide 29mln AMD (~65.000 USD) for the installation of water removal system; from its side the community is ready to have an input by about 5-7% of the project costs, by construction machines and by labor;
- To conduct the necessary construction works;
- To put the construction into commission in autumn, 2007.

#### Expected Project Output

- Significant decrease of impact of active landslides;
- Formation of domestic water removal system;
- Possibility of future installation of sewerage system in the village.

## Project 3

# Construction of Embankments to Protect from Water Floods and Landslides

## Description and Substantiation of the Project

In springtime and during the snowmelt the river Getik is increasing and pours into residential areas and causes various damages. According to the applications of the residents of those areas this project supposes construction of embankment to prevent the water flood into the residential area.

## Purpose and Objectives of the Project

Main objectives of the project are:

To construct the water embankments with the total length of 1 km in those areas, where there is a potential threat of river floods and landslide activation.

To implement the Project it is necessary to solve some important objectives:

- To identify the most flood-risky and landslide-risky areas and to prepare a plan of embankment construction;
- To find and to apply to local and international donor organizations which will be able to provide 60mln AMD (~135.000 USD) for the construction of embankments; from its side the community is ready to have an input by construction machines and by labor;
- To conduct the necessary construction works;
- To put the construction into commission in autumn, 2007.

## Expected Project Output

- Increasing of possibility to protect from the water floods;
- Increasing of possibility to protect from the landslides;
- Reducing of losses and damages, the villagers are having from the natural disasters.

## Project 4

### Renovation of Intercommunity Roads

#### Description and Substantiation of the Project

Since the intercommunity roads in the village have not been renovated for a very long time, nowadays there are in a very bad condition and sometimes are even impassable. Taking into consideration the fact, that there are very necessary for the everyday life of the community members this project is designed to renovate the worst and most used parts of the roads.

#### Purpose and Objectives of the Project

Main objectives of the project are:

- To renovate the worst and most used parts of the intercommunity roads in the village with total length of 5 km;
- To construct small drainage systems near the roads to prevent water flood onto the roads and their damaging.

To implement the Project it is necessary to solve some important objectives:

- To identify the worst and most used parts of intercommunity roads and to prepare a plan of their renovation;
- To find and to apply to local and international donor organizations which will be able to provide 10mln AMD (~23.000 USD) for the renovation of the roads; from its side the community is ready to have an input by 10-15% of project costs and by labor;
- To conduct the necessary construction works;
- To put the construction into commission in autumn, 2007.

#### Expected Project Output

- Improvement of the condition of intercommunity roads;
- Provision of means for easy transportation of village goods;
- Increasing of mobility inside the village and activation of village life.



## Project 5

### Renovation of Public Library in the Village

#### Description and Substantiation of the Project

After the collapse of Soviet Union the village library has never been updated. Considering that the village is too isolated from the capital city, the usage of TV and Internet is extremely limited and the books in the library are very old, it is very necessary to update the library and provide with the new books.

#### Purpose and Objectives of the Project

Main objectives of the project are:

- To renovate and to equip the library room;
- To provide new, modern and reasonable literature in Armenian, Russian and other languages.

To implement the Project it is necessary to solve some important objectives:

- To prepare a list of necessary literature and to order those books;
- To find and to apply to local and international donor organizations which will be able to provide 1mln AMD (~2.500 USD) for the construction of embankments; from its side the community is ready to have an input in 10-15% of project costs, by construction machines and by labor;
- To conduct the necessary renovation works;
- To put the construction into commission in autumn, 2007.

#### Expected Project Output

- Increasing of the level of reading;
- Provision of modern literature to the school;
- Activation of the cultural life in the community.

SHORT SUMMARY OF PROPOSED PORGRAMS, ACTIONS AND WORKS DURING 2004-2005 IN SEPARATE SPHERES ACCORDING TO THE  
THREE-YEAR PLAN OF SOCIAL-ECONOMICAL DEVELOPMENT

№	Name of the Program, Action or Works		Volume, Size	Necessary Financial Means (Thousand AMD)	Sources of Financing			Schedule of Implementation			Person in Charge	Notes
					Community budget %	Donor organizations %	Other (State budget, etc.)	2003 Size/ Financing	2003 Size/ Financing	2003 Size/ Financing		
1.	Foundation of Flour Mill	unit	1	20000,0	10	90	-		15km/ 12000,0	10km/ 8000,0	Vice Head of Community	HSNH
2.	Installation of Water Removal System	km	2	60000,0	10	70	20	30m/ 35000,0	20m/ 25000,0		Head of Community	HSNH
3.	Construction of Embankments to Protect from Water Flows and Landslides	km	1	20000,0	10	90	-		23000	7000	Head of Community	HSNH
4.	Renovation of Intercommunity Roads	km	5									
5.	Renovation of Public Library	unit	1									

## 5.4 Landslide Management - Within the Framework of Community Development Plan-

### 5.4.1 Outline of Landslide Management and Investigation

#### (1) Purpose

The purpose of landslide management in Martuni village is as follows;

- 1) To develop and enhance social infrastructures
- 2) To share information of natural disaster occurrences

#### (2) Procedure and Schedule

The following investigation was carried out for collecting detail information for the scale of landslides and other natural disasters. Detail information is shared by villagers through WkC and general assembly, and is principal data to perform hazard and risk resource map. The schedules of investigation are shown in Table 5.4.1

**Table 5.4.1 Schedule and Items of Landslide Investigation**

Investigation items	2005					
	Jul	Aug	Sep	Oct	Nov	Dec
Field Investigation	████████████████████					
Hazard map Preparation	████████					
Risk and Resource map Preparation		██████				
Countermeasure Plan Preparation		██████				
Drilling Survey		██				
Water Quality Analysis			████████			██████
Small Scale Countermeasure				██		
Monitoring Survey		██				
Establishment of Landslide Management Organization						██████

### 5.4.2 Field Investigation

#### (1) Geography and Geology

##### 1) Geography in Martuni village

Martuni village is surrounded by Gor, Miavor, Areguni Mountains which have many landslides. Getik River is flown to westwards and most of residences are

nearby the river.

Most of residence areas are located on a toe of huge landslide, whose length is about 8km and width is about 1.5km, moving to the northwards (Figure 5.4.1). This landslide bends the river to the north.



**Figure 5.4.1 Schematic View of Martuni village Landslide (view from NE)**

## 2) Geology of Martuni area

Martuni area is consisted of volcanic rocks. Tertiary andesite lavas, breccias and tuff formations are observed beside the road toward Getik River.

Welded structure is often observed in these tuffs and tuff breccias, indicates non-submarine volcanism. Most of andesite shows pale greenish gray color and sometimes epidote and chlorite are observed in vein and cavity by suffering low-grade metamorphism.

Poorly sorted soil, sand, gravel and boulder deposit can be seen in landslide body. Boulder and gravel are consisted of andesite, but not similar as former one, colorless is gray to right gray, silicified and rich in plagioclase, indicates this deposit is not original but emplaced from some other places.

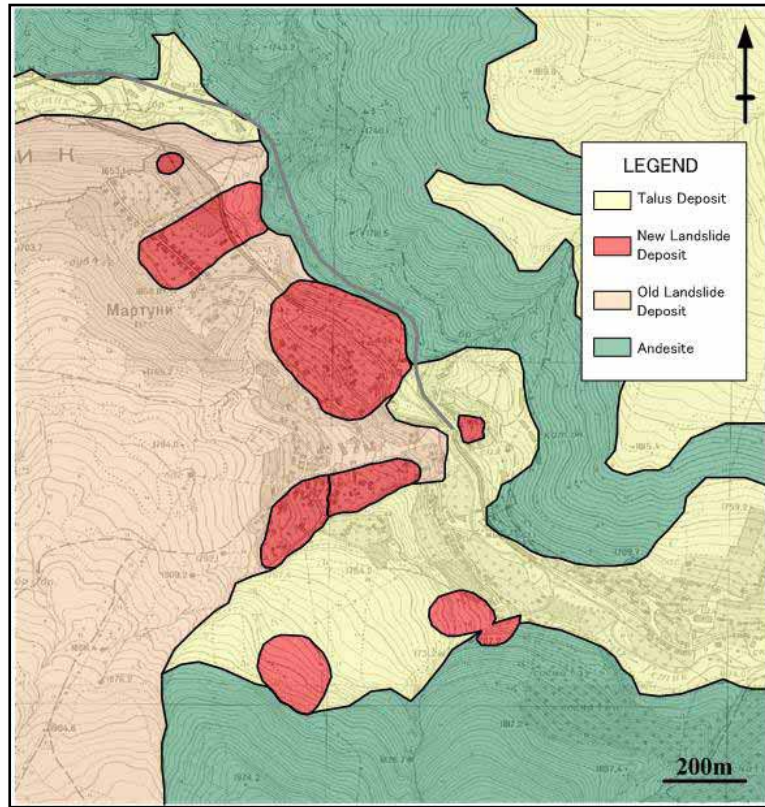


Figure 5.4.2 Geological Map

Table 5.4.2 Geological Section

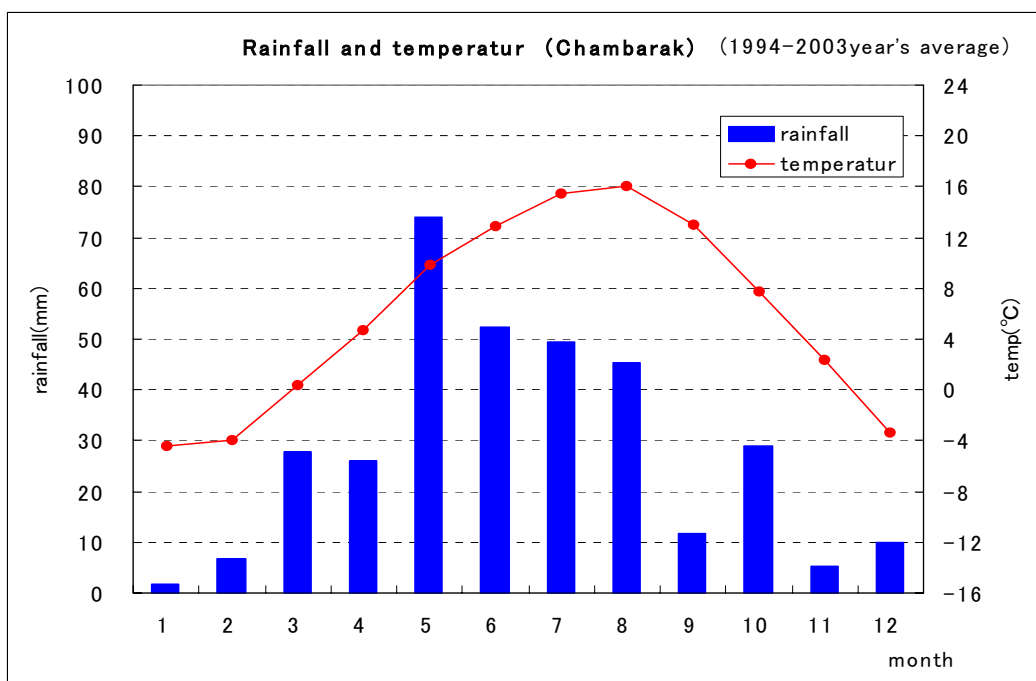
Name of Stratum	Condition of Strata	Description	Geological Age
Talus deposit	<ul style="list-style-type: none"> <li>- Poorly sorted gravels with soil</li> <li>- Volcanic ash</li> </ul>	Consisted of rock-fall, mud and debris flow deposit. Volcanic ash layer is sometimes intercalated.	Pleistocene - Holocene
New Landslide Deposit	<ul style="list-style-type: none"> <li>- Poorly sorted soil with gravels</li> </ul>	Most of landslide is located the toe of Old Landslide Deposit. Boulders are angular and consisted of gray-coloured silicified andesite.	(Inconformity) Holocene
Old Landslide Deposit	<ul style="list-style-type: none"> <li>- Poorly sorted soil with boulder-size gravels</li> </ul>	Boulders are angular and consisted of gray-coloured silicified andesite.	(Inconformity) Pleistocene?
Andesite	<ul style="list-style-type: none"> <li>- Pale greenish gray aphylic andesite lava, pyroclastics and welded tuffs</li> </ul>	Andesite is subject to low-grade metamorphism so that chlorite, epidote and calcite are found in matrix and vein of the rock as secondary minerals. Hydrothermal alteration is found in some areas and allenite, gypsum is found in veins and cavities. The Stratum is observed at the opposite side of Martuni village. The rock is consisted basement stratum in this area.	(Unconformity) Oligocene to Miocene

## (2) Water Condition and Utilization

### 1) Meteorology

An Average of meteorological data from 1994 to 2004 in Chambarak, about 20km east from Martuni village, are shown in Table 5.4.3. According to the data, maximum rainfall is in May, and minimum rainfall is in January. It is said that rainy season in Martuni village are spring and autumn, but rainfall in September is less than that of August. The temperature is sub-zero from December to February.

**Table 5.4.3 Rainfall and Temperature in Chambarak**



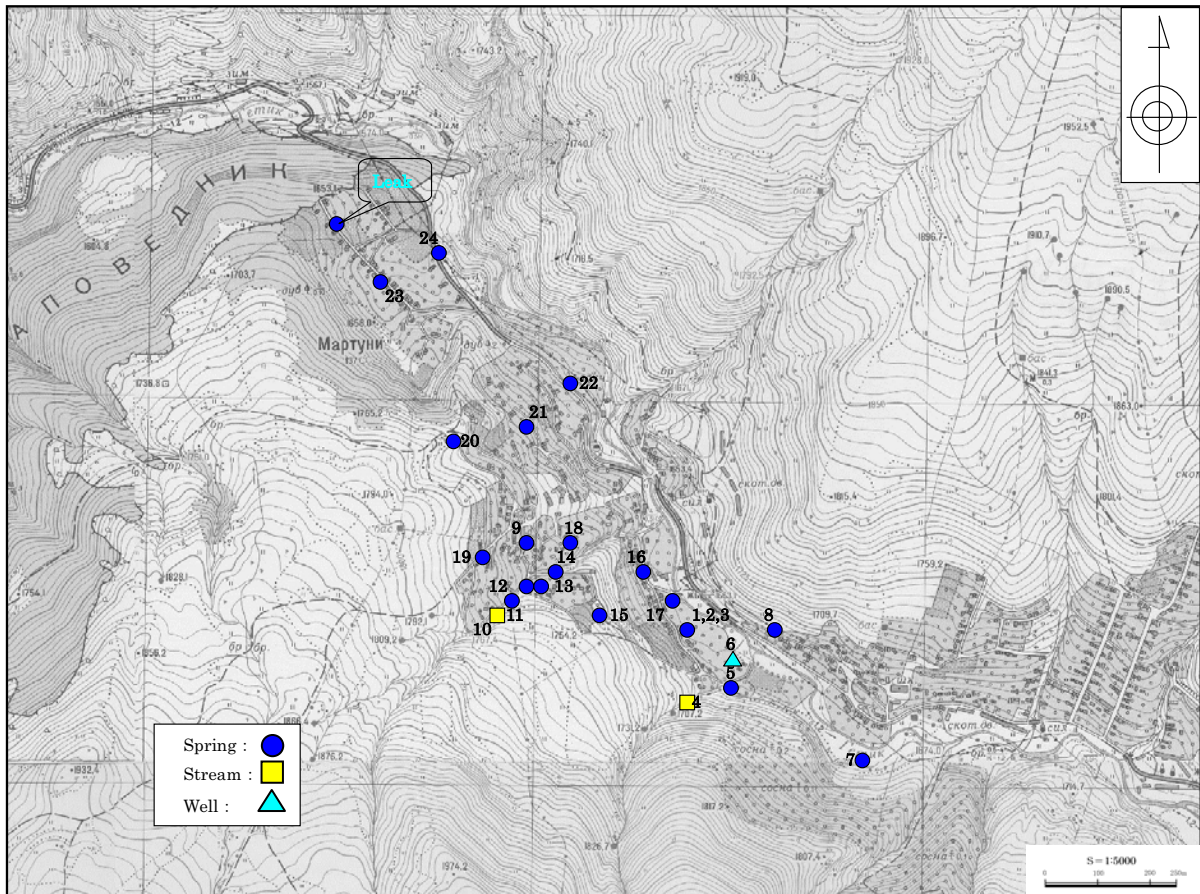
### 2) Water supply

Water supply system had been adopted in 1970s in Martuni village. Water comes from the stream which is located in upper part of the village, flown into water tank. Water tank is located in the highest portion in residential area, and distribution pipe runs inside/outside of each house. There are some water points in residential area for public use. In rainy season, water flows over the tank and flow down to the Getik river through soil drainage.

The amount of flowing in streams and from water points are shown in Figure 5.4.3 and Table 5.4.4.

**Table 5.4.4 Amount of Flowing of Each Water Point**

Point No	Date of measurement	Time of measurement	1st measurement			2nd measurement			3rd measurement			Average		Utilization A: Agricultural D: Drinking O: Others - : Not applicable	Remarks
			volume (L)	time (second)	L/sec	volume (L)	time (second)	L/sec	volume (L)	time (second)	L/sec	(L/sec)	(m <sup>3</sup> /day)		
1	17 Aug'05	10:20	1.00	9.15	0.11	1.00	6.65	0.15	1.00	6.78	0.15	0.14	11.73	-	Water is collected to a tank
2		10:25	0.75	44.65	0.02	1.10	78.00	0.01	1.00	68.44	0.01	0.02	1.31	-	
3		10:30	1.00	19.71	0.05	1.00	20.00	0.05	1.00	18.50	0.05	0.05	4.46	A	Collected from No1,2 water point
4		10:33	1.00	2.50	0.40	1.25	3.07	0.41	1.25	3.00	0.42	0.41	35.25	-	Surface water
5		10:38	1.00	36.28	0.03	1.00	37.44	0.03	1.00	37.58	0.03	0.03	2.33	A+D	Always drained to crops
6		10:50	1.5m3 of water is used for once or twice a week in dry season. (Overflowing in rainy season)											A	Groundwater level is -0.66m below
7		11:00	0.50	21.00	0.02	0.50	15.78	0.03	0.50	12.37	0.04	0.03	2.76	-	
8		11:15	1.00	18.46	0.05	1.00	17.50	0.06	1.00	17.56	0.06	0.06	4.85	-	Salty water
9		11:50	1.00	35.15	0.03	1.00	32.19	0.03	1.00	34.85	0.03	0.03	2.54	A	Lead to surface ditch and flown into crops
10		12:00	1.30	1.00	1.30	1.20	0.84	1.43	1.30	0.93	1.40	1.38	118.84	-	The flow of a stream
11		12:10	1.00	11.00	0.09	1.00	10.51	0.10	1.00	10.87	0.09	0.09	8.01	A	Water is stopped when it is not used
12		12:15	1.00	51.47	0.02	1.00	49.22	0.02	1.00	49.09	0.02	0.02	1.73	D	Water point
13		12:20	1.00	13.69	0.07	1.00	11.72	0.09	1.00	11.50	0.09	0.08	7.07	-	
14		12:22	Seepage is observed in a large area											-	
15	12:25	1.00	4.47	0.22	1.00	4.25	0.24	1.00	4.78	0.21	0.22	19.24	A	Water source is same as No.17	
16	12:30	1.00	5.41	0.18	1.00	5.16	0.19	1.00	5.54	0.18	0.19	16.10	-	no water in measurement	
17	12:40	1.00	45.00	0.02	1.00	45.59	0.02	1.00	44.19	0.02	0.02	1.92	O	Water point in front of village office	
18	11:09	1.00	12.53	0.08	1.00	12.44	0.08	1.00	11.95	0.08	0.08	7.02	-		
19	11:15	1.40	6.90	0.20	1.00	5.13	0.19	1.00	4.00	0.25	0.22	18.66	-		
20	11:30	1.00	3.31	0.30	1.00	3.82	0.26	1.00	3.87	0.26	0.27	23.68	A+D		
21	11:35	0.10	1.75	0.06	0.10	1.68	0.06	0.10	1.80	0.06	0.06	4.96	-		
22	12:12	0.40	64.28	0.01	0.40	54.29	0.01	0.50	80.62	0.01	0.01	0.57	-		
23	12:23	1.00	59.18	0.02	1.10	63.87	0.02	1.00	59.22	0.02	0.02	1.47	-		
24	12:40	0.30	11.58	0.03	0.10	9.28	0.01	0.20	10.25	0.02	0.02	1.62	-	Seeped from Collapsed slope	



**Figure 5.4.3 Location of Measurement**

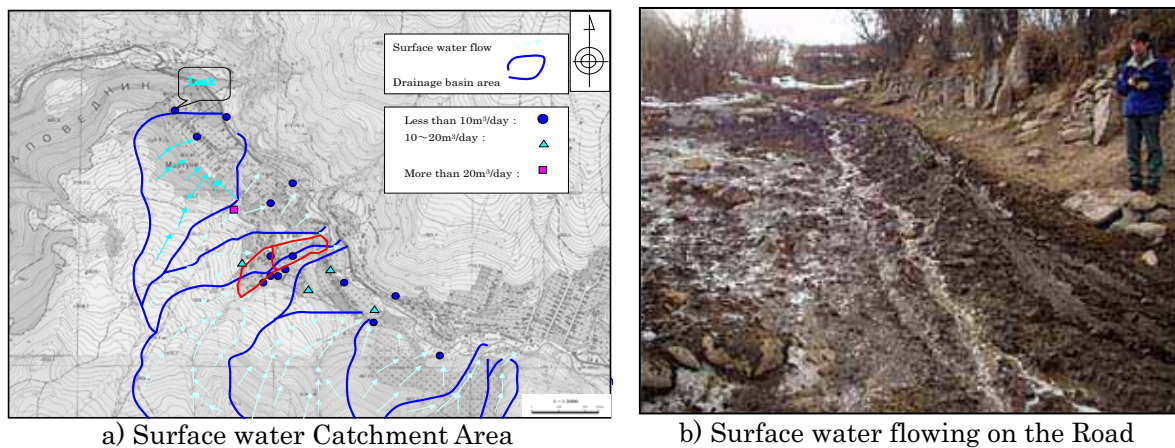
3) Sewage

Sewage system exists only for upper part of the village, and not available in lower part.

Sewage water in upper part flows into the small stream without any treatments. Therefore, almost all sewage water from houses and surface water are percolated to the ground or flows freely on ground or road.

#### 4) Drainage of surface water

There are some soil ditches inside the residential area, but these are not sufficient for drain surface water to the river. Furthermore, in heavy rainy day or snow melting season, much water comes from upwards of the village through village roads (Figure 5.4.4). Thus, galley is developed on the road.



**Figure 5.4.4 Drainage of Surface Water**

#### (3) Natural Disasters

Some small landslides are recognized in residential area and damage to many houses. According to house damaged survey, 108 out of 196 houses are damaged. It is considered that many of these houses are affected by landslide movement.

There are ten (10) active landslides are recognised in this field investigation and interviewing from the villagers and is classified into eight landslide areas due to similar characteristics (Figure 5.4.4).

### 5.4.2 Hazard Map

#### (1) Preparation of hazard map

A hazard map is prepared for assessing the risk of natural disaster in Martuni village. Preparation of the map is in the WkC, the process is as follows;

- 1) Engineer of JICA Study team (One of WkC member) carried out field



investigation for the trace of natural hazards, which is not only for landslide, but also for several disasters.

2) Engineer makes a draft hazard map of hazard occurrences and showed in WkC meeting.

3) WkC members discussed and confirmed the draft map on the basis of their experience, and add/modify the map.

4) WkC members also discussed and classified hazards based on the occurrence probability. The unit of classification is roughly decided as that the disaster will occurs i) within 5 years ii) 5 to 10 years later and iii) 10 years after.

## (2) Observation and evaluation

The following matters are necessary for performing the map;

- Necessity of interview survey: villagers know the occurrences of disasters very well, where when and how it was. During the performing of hazard map, engineering geologists carried out field survey and presented the results in WkC. After his presentation, they pointed out the occurrences of landslide and related disaster on the map, not included in presentation.

- Necessity of engineer's eyes: villagers know the occurrences of disasters very well, where when and how it was. But villager exaggerate the disasters in many times, and necessary to confirm traces of disaster.

### **5.4.3 Risk and Resource Map**

#### (1) Preparation

A risk/resource map was prepared when the draft hazard map was confirmed. The map is prepared by WkC through several discussions. Following items are discussed and included in the map;

##### 1) Risk Objects

- Landslide area and other disaster-prone area (flood and mud/debris flow, steep slope and trace of collapse)

- Damaged residents (Based on the damaged-house survey)

##### 2) Resource Objects

- Grazing land and crop area

- Monastery

- Natural Environment

## (2) Observations and Evaluations

### 1) Hazard Map

The following matters are necessary for performing the map;

- Necessity of interview survey: villagers know the occurrences of disasters very well, where when and how it was. During the performing of hazard map, engineering geologists carried out field survey and presented the results in WkC. After his presentation, they pointed out the occurrences of landslide and related disaster on the map, not included in presentation.

- Necessity of engineer's eyes: villagers know the occurrences of disasters very well, where when and how it was. But villager exaggerate the disasters in many times, and necessary to confirm traces of disaster.

### 2) Risk and Resource Map

The following matters are necessary for performing the map;

- Necessity of record survey: villagers know the occurrences of monastery, but they did not know the details. It seems that they were coming and living from 1920's and such monastery was not made by their ancestors.

## 5.4.3 Priority of Landslide

Priority of Landslide is decided based on deformation of ground by field investigation, interview from the villagers, and numbers of houses and roads (Table 5.2.1).

The priority of landslide is decided based on the activity of landslide itself and consequence result, as followings;

- a) Activity of Landslide
- b) Numbers of houses which are located and damaged by landslide occurrence
- c) Numbers of houses which are not located in landslide area but will be damaged by landslide occurrence (e.g. houses below landslide)
- d) Importance of roads which is passing landslide area or below landslide

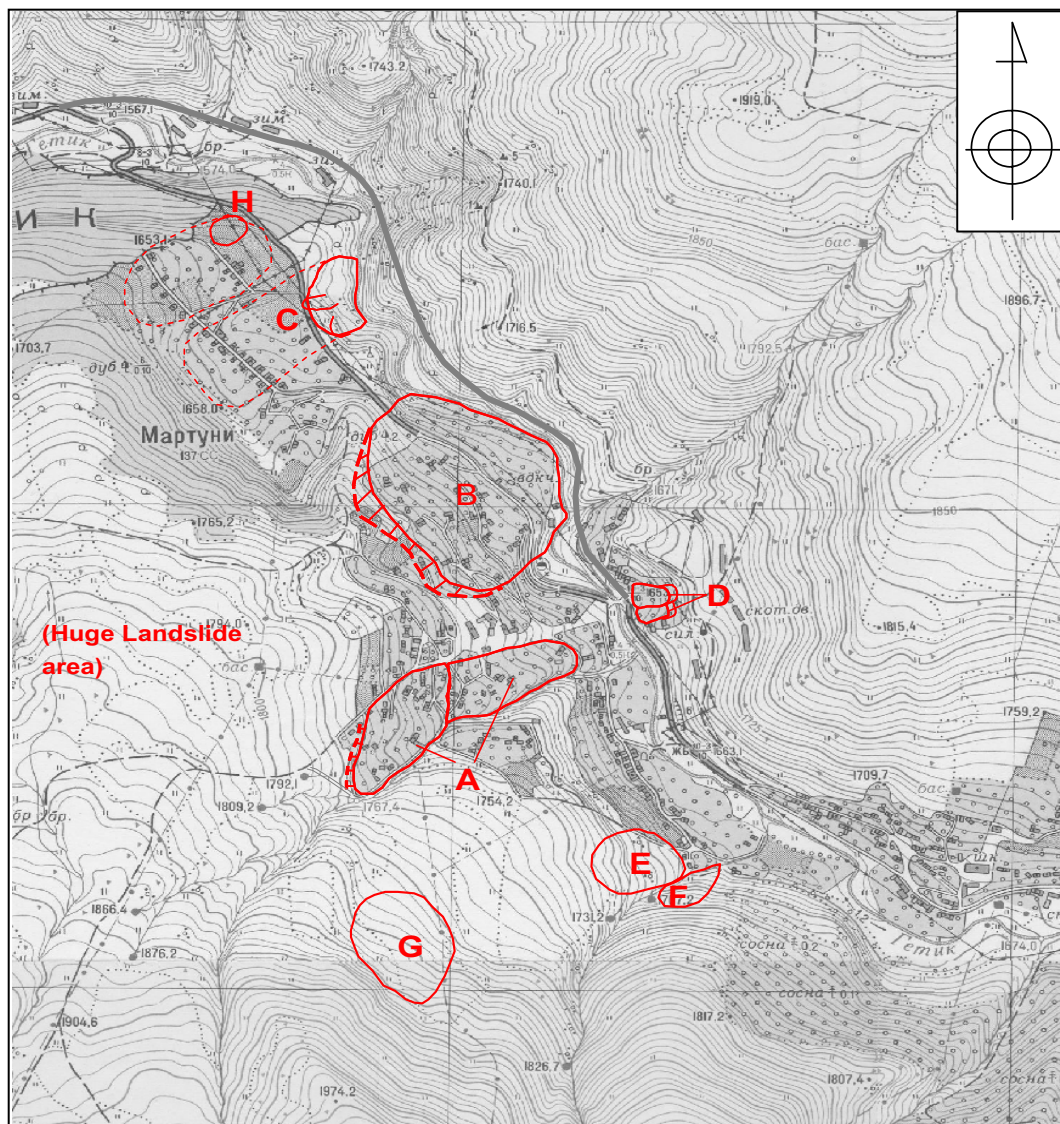
Based on this result, landslide detail investigation and countermeasure works are carried out in a area.

These results are explained to the villagers and they agreed with detail investigation in

this area.

**Table 5.4.5 Priority of Landslide for Mitigation**

Name of Landslide		A	B	C	D	E	F	G	H	Legend
Considered Activity		□	□	□	□	□	○	□	□	
Consequence	Houses in Landslide Area	□	□	-	-	-	-	-	-	○ Medium-Activity, Some Risk Objects
	Houses below Landslide Area	○	-	-	-	○	○	-	-	△ Little-Activity Few Risk Objects
	Road	□	□	□	□	○	-	-	○	
<b>Priority</b>		<b>1</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>2</b>	<b>3</b>	<b>8</b>	<b>7</b>	



**Figure 5.4.5 Landslide Distribution in Martuni Village**

### 5.4.7 Landslide Investigation

Landslide investigation was carried out in a landslide block and geology of drilling sites are as follows;

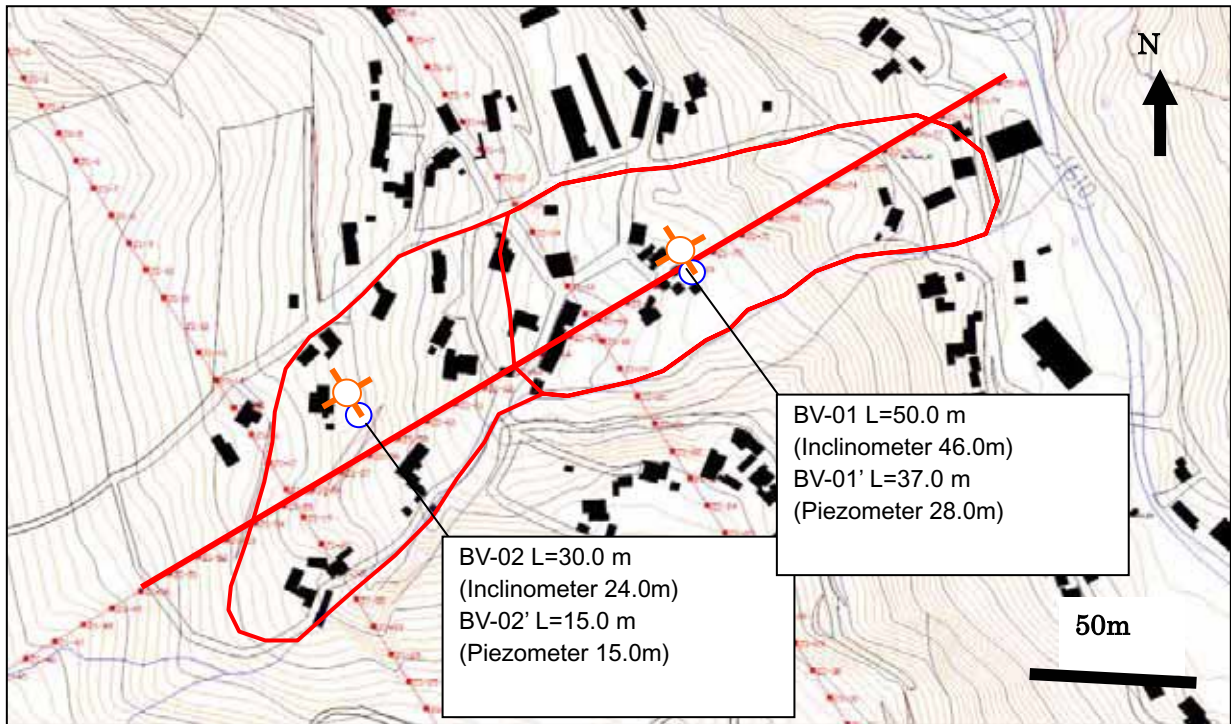


Figure 5.4.6 Location of Section and Drilling sites in A Landslide Block

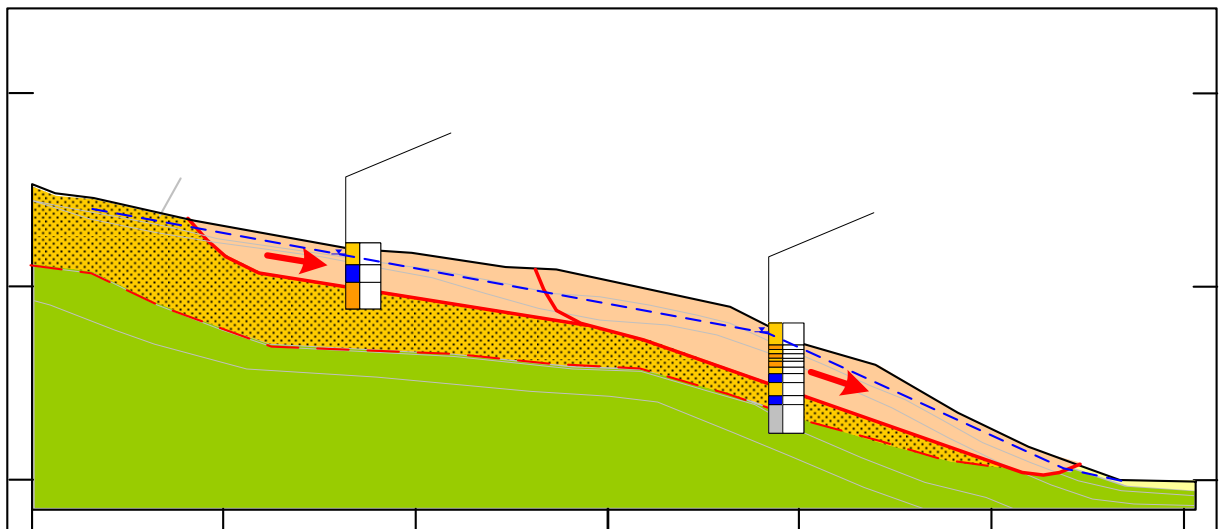











Figure 5.4.7 Geological Cross Section in A Landslide Block




#### (1) Core Drilling

Core drilling survey was carried out for investigating geological features of landslide. Geological columns are shown in Table 5.4.6 and 5.4.7

**Table 5.4.6 Drilling Result of BV-01**

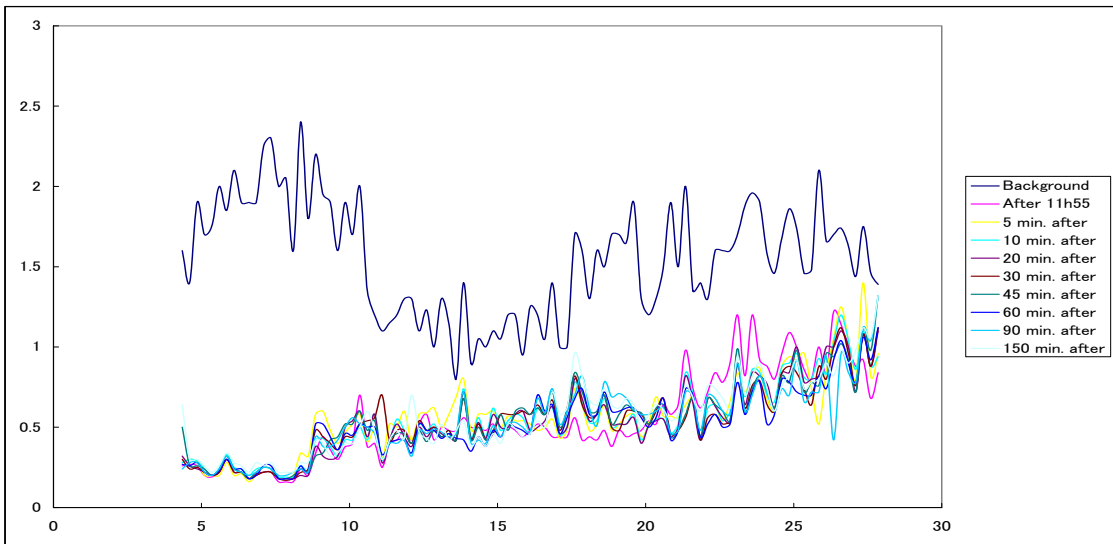
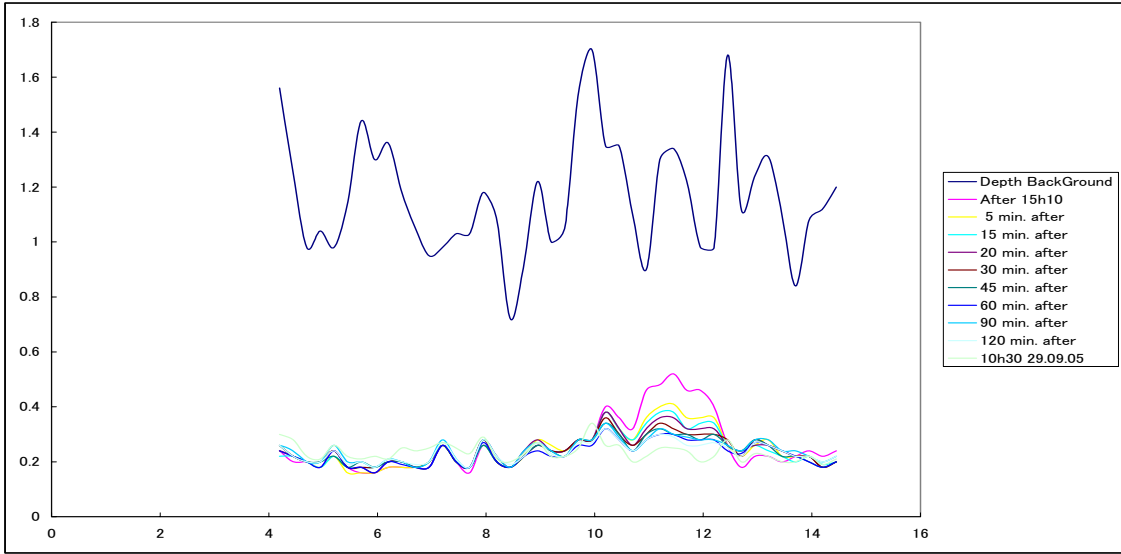
Photo	Depth	Lithology	Description	
	0	Soil/Loam deposit (Lm)	Fragmental material of bedrock, tuff-sandstone (blocks, crushed stone, grass) with loamy filling	
	5			
	5	10.0		
	10			
	10	11.8	Detritus deposit (Dt)	Detritus and grass soil with loamy filling
	13.4	Lm	Boulders of bedrock is including	
	15.2	Dt	Boulders with calcareous cement, with sandy loam	
	16.8	Lm	Loam and loamy-sand soil, soft-plastic	
	15	20.2	Dt	Boulders with calcareous cement, with sandy loam and dense clay.
	20			
	20	23.0	Lm	Heavy, plastic, with inclusion of fragmental bedrock material
	25			
	25	27.3	Clay (Cl)	Hard-plastic clay, dense, with fragments of weathered rock inside
	30			
	30	33.5	Lm	Heavy, plastic, with inclusions of bedrock fragments, including tuff sandstone
	35			
	35	37.0	Cl	Heavy clay, plastic, ferruginated, with up to 30% of inclusions of boulders, detritus and grass of bedrock
	38			
	38	38-48	Andesite	(Failed, only slime is remained)
	48	50.0	Andesite (An)	Tuff sandstone, firm, weakly fractured

**Table 5.4.7 Drilling Result of BV-02**

Photo	Depth	Lithology	Description
	<p>0</p> <p>5</p> <p>10</p>	<p>Soil/Loam deposit (Lm)</p>	<p>Soil/Vegetation layer; loam, heavy and dense, soft to hard-plastic, with detritus and grass</p>
	<p>10</p> <p>15</p> <p>17.0</p>	<p>Clay (Cl)</p>	<p>Dense and heavy, plastic, with inclusion of up to 20% of detritus, glass and rare boulders</p>
	<p>20</p> <p>25</p> <p>30</p>	<p>Detritus deposit (Dt)</p>	<p>Dense, heavy and loamy with inclusion of bedrock fragmental material,</p>
<p>9.8</p>	<p>30.0</p>		

**Table 5.4.8 Standard Penetration Test Result**

<b>No.</b>		<b>BV-1' (L=37.0m)</b>			
Starting Depth (m)	Finishing Depth (m)	Total (N)	Detail		
			.15-.25	.25-.35	.35-.45
1.15	1.44	<b>50</b>	27	19	4
2.15	2.45	<b>48</b>	24	14	10
3.15	3.42	<b>50</b>	31	13	6
4.15	4.38	<b>50</b>	21	22	7
5.15	5.36	<b>50</b>	35	12	3
6.15	-	<b>50</b>	50	0	0
7.15	7.27	<b>50</b>	38	12	0
8.15	-	<b>50</b>	50	0	0
9.15	-	<b>50</b>	50	0	0
10.15	10.30	<b>50</b>	34	16	0
11.15	11.45	<b>47</b>	19	23	5
<b>No.</b>		<b>BV-2' (L=15.0m)</b>			
Starting Depth (m)	Finishing Depth (m)	Total (N)	Detail		
			.15-.25	.25-.35	.35-.45
1.15	1.44	<b>50</b>	28	19	4
2.15	2.45	<b>48</b>	12	14	10
3.15	3.42	<b>50</b>	21	19	10
4.15	4.45	<b>49</b>	17	25	7
5.15	-	<b>50</b>	50	0	0
6.15	6.41	<b>50</b>	26	18	6
7.15	7.40	<b>50</b>	25	20	5
8.15	8.37	<b>50</b>	27	21	0
9.15	9.41	<b>50</b>	20	25	5
10.15	10.43	<b>50</b>	17	24	9
11.15	11.30	<b>50</b>	29	21	0
12.15	12.37	<b>50</b>	23	19	8
13.15	13.34	<b>50</b>	27	19	4
14.15	14.43	<b>50</b>	15	28	7
15.15	15.42	<b>50</b>	19	21	10



**Figure 5.4.8 Ground Water Prospecting Result**



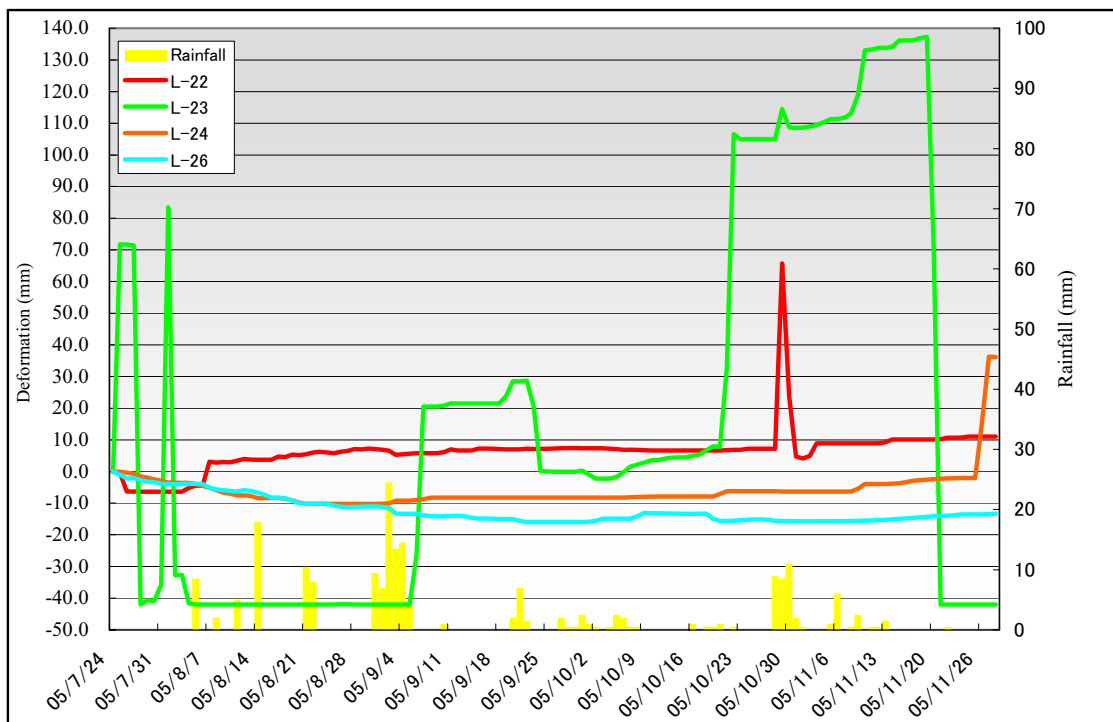
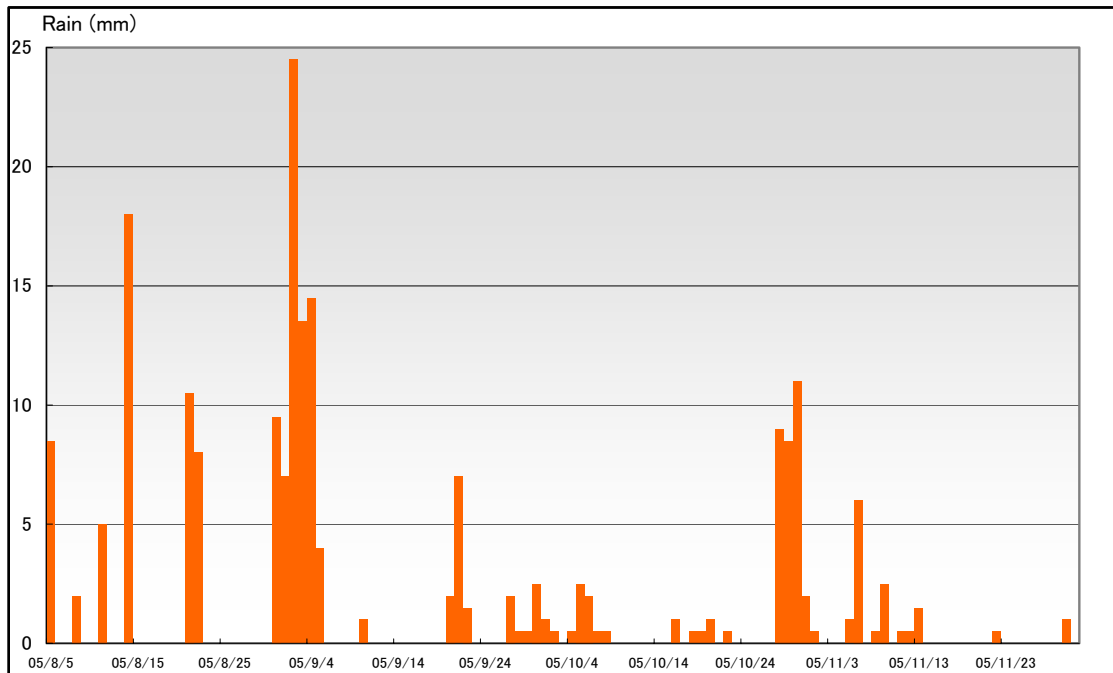
### 5.4.8 Landslide Monitoring

Landslide monitoring equipment have been installed in the village and contents are shown in Table 5.4.9.

**Table 5.4.2 Monitoring Equipment installed in Martuni Village**

Equipment	Quantity	Location	Period	Movement
Wooden Beam (Nuki-Ita)	3	orange line in Figure 5.2.3	May 2005 - Recent	No Acceration movement
Extensometer	5	blue line in Figure 5.2.3	December 2005(1), June 2005(4) – Recent	Data indicate recurrence movement about 0 to 2 cm, considered low possibility of landslide movement
Rain gauge	1	blue circle in Figure 5.2.3	August 2005 - Recent	-
Inclinometer guide pipe	2	orange circle in Figure 5.2.5	November 2005 - Recent	Data collecting
Piezometer	2	blue circle in Figure 5.2.5	September 2005 - Recent	Groundwater level is almost stable, GL-3.9m in BV01'(lower), GL-4.4m in BV02'(upper)

It is considered that the landslides in Martuni village are almost stable from July to November 2005 by above-mentioned results.



**Figure 5.4.9 Landslide Monitoring Result**