



SEVENTH WORK PROGRAMME  
THE PEOPLE PROGRAMME  
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**CHANGING HYDRO-METEOROLOGICAL RISKS – AS ANALYZED BY A NEW  
GENERATION OF EUROPEAN SCIENTISTS**

**Case study area Buzău County, Romania fieldwork report (part I)**

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*Report prepared by Roxana Liliana Ciurean, Veronica Zumpano and Žiga Malek, with inputs from the CHANGES team*

Bucharest, July 2012

## 1. Basic information about the fieldwork

<b>Date</b>	5. 7. – 13. 7. 2012
<b>Venues</b>	
Pătărlagele	Natural Hazards Research Station
Cislău	Cislău Forest District
Nehoiu	Nehoiu Town Hall Nehoiu Forest District Romanian Academy Forest District Nehoiu valley
Buzău	ISU Buzău (Emergency Situation Inspectorate) Statistical County Direction Buzău County Council – Tourism and Agrotourism Promotion Direction Regional Environmental Protection Agency Buzău Prefecture Office for Cadastre and Land Registration Buzău
<b>Participants</b>	<ul style="list-style-type: none"> <li>- Veronica Zumpano (ESR06, Institute for Geography, Romanian Academy)</li> <li>- Roxana Liliana Ciurean (ESR05, University of Vienna, Austria)</li> <li>- V. Juliette Cortes (ESR10, CNR-IRPI Padova, Italy)</li> <li>- Zar Chi Aye (ESR09, University of Lausanne, Switzerland)</li> <li>- Mihai Micu (Researcher, Institute for Geography, Romanian Academy)</li> <li>- Žiga Malek (ESR04, IIASA Laxenburg, Austria)</li> <li>- Detailed information about visited stakeholders in Part 3</li> </ul>
<b>Objectives</b>	<ul style="list-style-type: none"> <li>- data collection for CHANGES September meeting</li> <li>- obtaining general information about the organization and role of visited stakeholders in Buzău County (both regional and municipality level)</li> <li>- discussion with stakeholders on data availability and their involvement in the CHANGES project</li> <li>- discussion with local and regional professionals on issues connected with all aspects of hydro-meteorological risks: hazard occurrence and consequences, changes to the physical and social characteristics of the area (including land use changes), main human activities in the area (forestry), information and data about past events</li> </ul>

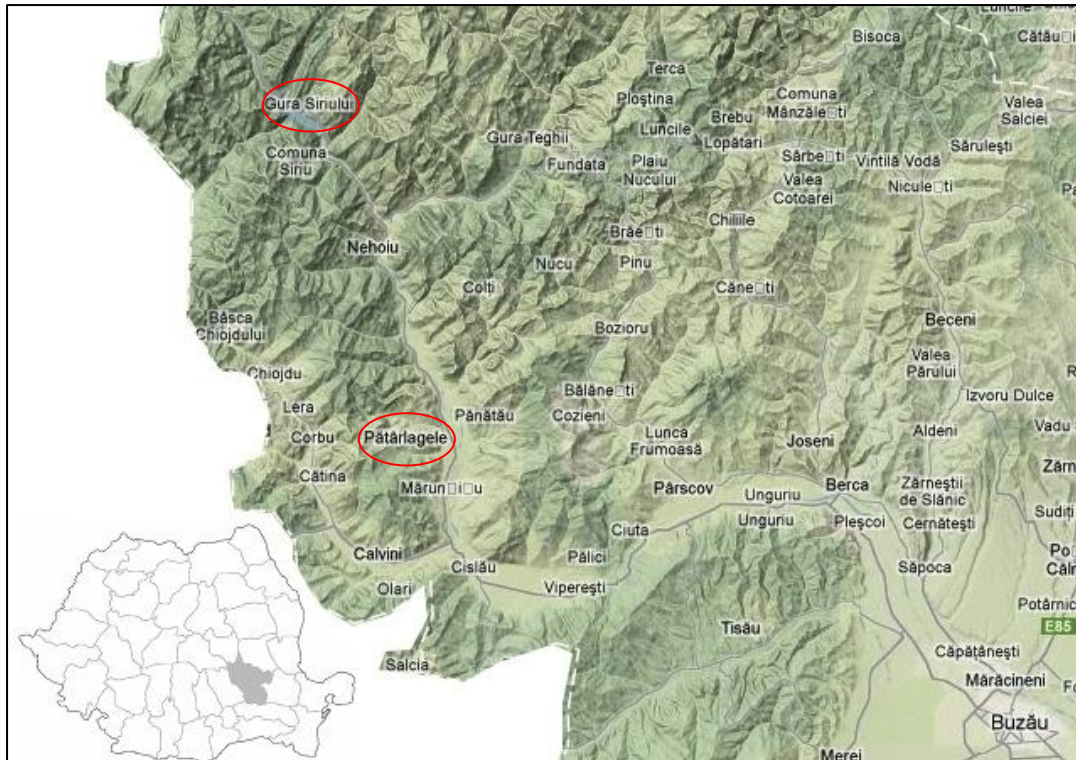
## 2. Introduction

### **Buzău Carpathians and Subcarpathians**

The case study area is a part of a major European mountain region: The Carpathians. It has complex physical-geographic characteristics defined by steep slopes and a dense river network, posing serious limitations for human activities. Extreme precipitation events leading to hydro-meteorological hazards such as flash floods and landslides are frequent and will occur more likely due to expected climate changes. Although it is a rural area in depopulation, the recent trends suggest that future development could result in further increase of hydro-meteorological risks. Increase of exposed elements at risk due to urbanization could aggravate the consequences of expected climate changes. It is interesting for research due to its complex socio-economic background demonstrated in the settlement and land use pattern.

The Buzău Carpathians and Subcarpathians lie in the south-eastern part of Romania. They are situated between the lower plain and higher Carpathians along the Buzău river valley. The study area is characterized by complex topography of mountains, hills and depressions. The Subcarpathians reach the altitude of 900 m, whereas the relative relief is up to 500 m. The drainage density is 3-8 km/km<sup>2</sup> and slopes are below the 30-45 degree class. The Carpathians upstream are rising from 1300 to 1700 m, with the relative relief of 500 to 800 m. The drainage density is higher with 8-10 km/km<sup>2</sup>, and the slopes are situated in the class between 30-45 degrees. The Buzău river valley in this area lies at the altitude between 250-300 m. According to Micu (2011) the summer shows the highest landslide occurrence (June followed by May and September). The yearly amount of precipitation in the area is between 630-700 mm, with torrential heavy summer rainfalls and spring showers overlapping snow melt in the Carpathians. Landslides cover large areas in the case study site, sometimes greater than two-thirds of the total area (Muică and Turnock 2008).

One of the important characteristics of the case study area is the long history of intensely populated (from 90-150 pers/ km<sup>2</sup>) and cultivated areas, including large deforested areas. Hill slopes offered support for the spread of subsistence communities, as they are covered with relatively fertile landslide material. On the other side, more intensive agriculture has developed on the Buzău river terraces, as well as more dense urban areas and important communication and transportation corridors (national road and railroad) (Muică and Turnock 2008).



**Figure 1: Case study area in the Buzău river valley from Siriu to Pătărlagele (Google Earth 2012)**

The area witnessed changes to the pattern of cultivated land and pastures in the last 20 years as well as deforestation, with illegal logging and subsistence farming being important phenomena. This could be partly attributed to land restitution reforms, and partly to the less favorable economic conditions in the 1990s. All these processes could have lead to increased damages to hydro-meteorological hazards, as 30 - 40% of agricultural areas are affected by landslides, mudflows and erosion (Micu and Bălțeanu 2011).

Socio-economic change in Romania in the last two decades following the entry to the European Union lead to agricultural and environmental policy changes and economic development. Profound changes in land use due to socio-economic development and changes in property ownership are expected in the next 30-40 years, and together with the effects of climate change the vulnerability of the area to hydro-meteorological hazards is about to increase (Micu and Bălțeanu 2011).

A summary description of daily activities for the first part of the fieldwork is presented below. A detailed description, where necessary, is presented in the annexes attached.

### 3. Daily description

Date	<b>05-07-2012</b>
Stakeholder (see Annex 1)	Ocolul Silvic de stat Cislău ( <b>Cislău Forest District, state owned</b> ) Eng. Moise Daniela, Head of the District
Objective of the meeting (for more information see meeting notes)	Understanding of the actual regulation and general situation regarding the forested areas owned by the state. Questionnaire submitted by Žiga
Participants	Zar Chi Aye, Roxana Ciurean, Juliette Cortes, Žiga Malek, Veronica Zumpano, Mihai Micu

Date	<b>06-07-2012</b>
Stakeholder (see Annex 1)	Primăria Nehoiu ( <b>Nehoiu Town Hall</b> ) Mr. Ionuț Milea, Vice-mayor; Planning Office, Mr. Fieraru Liviu
Objective of the meeting (for more information see Annex 2, 3 and meeting notes)	Interview and data collection. Questionnaire submitted by Žiga
Participants	Zar Chi Aye, Roxana Ciurean, Juliette Cortes, Žiga Malek, Veronica Zumpano, Mihai Micu

Date	<b>06-07-2012</b>
Stakeholder (see Annex 1)	Ocolul Silvic privat Nehoiu ( <b>Nehoiu Forest District, private owned</b> ) Eng. Dicu Crina, Head of the District
Objective of the meeting (for more information see meeting notes)	Interview from the participants and questionnaire submitted by Žiga
Participants	Zar Chi Aye, Roxana Ciurean, Juliette Cortes, Žiga Malek, Veronica Zumpano, Mihai Micu

Date	<b>06-07-2012</b>
Stakeholder (see Annex 1)	Inspectoratul pentru Situatii de Urgenta (I.S.U. Buzău ) <b>Emergency Situation Inspectorate</b> Lt. Col. Dănuț Nicolae, Chief Inspector; Col. Dan Manciu, Vice-Chief Inspector
Objective of the meeting (for more information see Annex 1, meeting notes)	Organization of a possible meeting in the Operational Center, interview from the participants
Participants	Zar Chi Aye, Roxana Ciurean, Juliette Cortes, Žiga Malek, Veronica Zumpano, Mihai Micu

Date	<b>09-07-2012</b>
Stakeholder (see Annex 1)	Directia Județeană de Statistică Buzău ( <b>Statistical County Direction</b> ) Mrs. Cornelia Geambașu, Executive Director
Objective of the meeting (for more information see Annex 1, 2, meeting notes)	Understanding the availability and the quality of the data. Data collection
Participants	Roxana Ciurean, Žiga Malek, Veronica Zumpano, Mihai Micu

Date	<b>09-07-2012</b>
Stakeholder (see Annex 1)	Consiliul Județean Direcția de promovare a turismului și agroturismului ( <b>County Council – Tourism and Agrotourism Promotion Direction</b> ) Mr. Petcu Gheorghe, Counsellor
Objective of the meeting (for more information Annex 1, 2, 3)	Interview from the participant, questionnaire submitted by Žiga, data collection
Participants	Roxana Ciurean, Žiga Malek, Veronica Zumpano, Mihai Micu

Date	<b>09-07-2012</b>
Stakeholder (see Annex 1)	Agentia Regionala de Protectie a Mediului Buzău ( <b>Regional Environmental Protection Agency Buzău</b> ) Mrs. Postolache Sanda, Head of Waste and Protected Areas Bureau
Objective of the meeting (for more information Annex 1, meeting notes)	Interview from the participant, questionnaire submitted by Žiga
Participants	Roxana Ciurean, Žiga Malek, Veronica Zumpano, Mihai Micu

Date	<b>10-07-2012</b>
Stakeholder (see Annex 1)	Primăria Nehoiu ( <b>Nehoiu Town Hall</b> ) Planning Office, Mr. Fieraru Liviu; Serviciul de Voluntari Nehoiu ( <b>Nehoiu Volunteer Service</b> ) Mr. Adrian Stan
Objective of the meeting (for more information see Annex 1, 2, 3, meeting notes)	Data collection
Participants	Roxana Ciurean, Žiga Malek, Veronica Zumpano

Date	<b>11-07-2012</b>
Field work (for more information see Annex 1)	<b>Nehoiu Valley</b> (with Mr. Adrian Stan and Mr. Laurentiu Floroiu) <b>Nehoiu Library, Nehoiu Cultural Center (ADCN)</b>
Objective of the meeting (for more information see excel sheet, field notes)	Data collection
Participants	Roxana Ciurean, Žiga Malek, Veronica Zumpano

Date	<b>13-07-2012</b>
Stakeholder (see Annex 1)	Ocolul Silvic al Academiei Romane ( <b>Romanian Academy Forest District, private owned</b> ) Dr. Adrian Angelescu, Head of the District
Objective of the meeting (for more information see Annex 1, 3)	Interview from the participant, questionnaire submitted by Žiga
Participants	Roxana Ciurean, Žiga Malek, Veronica Zumpano

Date	<b>13-07-2012</b>
Stakeholder (see Annex 1)	Prefectura Buzău ( <b>Buzău Prefecture</b> ) Mrs. Năstase Dorina, Mr. Vasile Popovici  Oficiul pentru Cadastru si Publicitate Imobiliara ( <b>Office for Cadastre and Land Registration</b> ) Mrs. Bădicu Olimpia, Head Engineer
Objective of the meeting (for more information see Annex 1, 2)	Understanding the availability and the quality of the possible data. Data collection
Participants	Roxana Ciurean, Žiga Malek, Veronica Zumpano

#### 4. Final remarks

The fieldwork in Buzău Subcarpathians was important in getting the information about the physical and socio-economic, as well as organizational setting. It was very successful in terms of involving the potential stakeholders into the project and inviting them to the CHANGES meeting in September even though the primary objective of the fieldwork was to gather the data needed for the needs of particular early stage researchers and the CHANGES meeting in September, which will take place in the area.

##### *Data*

Not all of the necessary data has been collected yet; however the participants of the fieldwork remain in contact with the authorities responsible for the data. Some of the data also seems to be unavailable (cartographic and multi-temporal data). We are however aware of the data situation in terms of the availability and where to acquire it. One important aspect when considering future data gathering (additional data) is the collaboration with the Institute of Geography at the Romanian Academy in Bucharest and their network.

##### *Stakeholders' involvement*

Most of the stakeholders are enthusiastic about joining the September meeting as well as further and continuously participate in the project activities. This is especially true for stakeholders on the local level (Municipality of Nehoiu), as they can also be seen as potential beneficiaries of the project. When planning future activities, which need the involvement of stakeholders, special attention should be made to collaborating with the Institute of Geography at the Romanian Academy in Bucharest, not only (but mostly) due to language issues (translation and presentation of the researchers to authorities).

Besides involving the stakeholders dealing with disaster management and post disaster activities on both levels (local, regional), other stakeholders that are important due to the specific characteristics of the area (forestry services, cadaster office, etc.) were visited. It is advised to involve them also in the future activities of the project.

##### *Stakeholders' needs*

They all recognized the potential of the project, not only due to the possible outcomes that could help them, but also due to its scientific value. They value the effort of the researchers and offer support in terms of data as much as possible. In terms of their needs, they are mostly interested in short and medium term projections and scenarios. They emphasized the socio-economic condition in the area (being a poor, rural area in depopulation) that cannot afford the involvement of more expensive technological solution (even if considered as cheap by researchers, due to the differences between west and east Europe).

## 5. Acknowledgements

The researchers would like to thank Mihai Micu and the Institute of Geography of the Romanian Academy for helping with the communication (translation, phone calls), hosting us at the Pătârlagele Natural Hazards Research Station and at the Institute for Geography in Bucharest, as well as for the transport.

## 6. References

- Micu, M., 2011. Landslide Assessment: From Field Mapping to Risk Management. A Case-Study in the Buzău Subcarpathians. *Forum geografic*, X, pp.70–77.
- Micu, M. & Bălteanu, D., 2011. Romania: Buzău County, Romania. Case study presentation for the CHANGES project. Available at: <http://www.changes-itn.eu/Portals/0/Content/Test%20sites/Case%20study%20area%20Romania.pdf> [Accessed December 16, 2011].
- Muică, N. & Turnock, D., 2008. A Toponomical Approach to the Agrarian History of the Pătârlagele Depression (Buzău Subcarpathians, România). *Human Geographies - Journal of Studies and Research in Human Geography*, 2(2).



## Annex 1

### Stakeholders' Contact List

<p><b>1. Direcția Județeană de Statistică Buzău</b> Mrs. Cornelia Geambașu, Executive Director <a href="mailto:tele@Buzău.insse.ro">tele@Buzău.insse.ro</a></p> <p><b>Statistical County Direction:</b> the regional office of the National Statistical Institute; the institution provided us information about population and residences census at regional (county) and local level (municipalities, towns, communes); all data before 1990 is available in analog format</p>
<p><b>2. Consiliul Județean – Direcția de promovare a turismului și agroturismului</b> Mr. Petcu Gheorghe, Counsellor <a href="mailto:ghepetcu@yahoo.com">ghepetcu@yahoo.com</a></p> <p><b>County Council – Tourism and Agrotourism Promotion Direction:</b> Mr. Petcu provided detailed information about the historical, geographical and cultural settings of Buzău County; he is author of some monographic books and one encyclopedic volume and also involved in writing and editing of regional development plans (on tourism and economic sectors)</p>
<p><b>3. Agenția Regională de Protecție a Mediului Buzău</b> Mrs. Postolache Sanda, Head of Waste and Protected Areas Bureau <a href="mailto:sanda.postolache@apmbz.anpm.ro">sanda.postolache@apmbz.anpm.ro</a></p> <p><b>Regional Environmental Protection Agency Buzău:</b> regional office of National Environmental Protection Agency; participant at the first presentation of the project in Buzău County (July 2011)</p>
<p><b>4. Direcția pentru Agricultură Județeană Buzău</b> Mrs. Lupu Tatiana, Engineer <a href="mailto:dadrBuzău@clicknet.ro">dadrBuzău@clicknet.ro</a></p> <p><b>County Agriculture Direction:</b> responsible for the implementation of the strategy and government program for agriculture and related domains at county level (under the subordination of the Ministry for Agriculture and Rural Development); the institution can provide data about the statistical situation of terrains (SSTs)</p>
<p><b>5. Oficiul pentru Cadastru și Publicitate Imobiliară</b> Mrs. Badicu Olimpia, Head Engineer 004/0731606324 <a href="mailto:oli_bad@yahoo.com">oli_bad@yahoo.com</a></p> <p><b>Office for Cadastre and Land Registration:</b> regional office of the National Agency for Cadastre and Land Registration (ANCPI); in 2001 the Agency took from the Ministry of Agriculture, Alimentation and Forests the responsibility of the cadastre (land registration) and agricultural territory organization, for this reason, the documentation is divided between the two institutions</p>
<p><b>6. Serviciul de Voluntari Nehoiu</b> Mr. Adrian Stan <a href="mailto:adrianno_stan74@yahoo.com">adrianno_stan74@yahoo.com</a></p>

<p><b>Nehoiu Volunteer Service:</b> main volunteer body in collaboration with the Emergency Situation Inspectorate (ISU); the first people on site when a disaster happens, who know well the area and the community; they are in direct communication with ISU, participate at all training activities, etc.; they keep records (reports, protocols, etc.) of damages due to impact of hazards, compensation and aids received, etc. most of the data from Nehoiu authorities were provided by this local service</p>
<p>7. <b>Primăria Nehoiu (Nehoiu Town Hall - no web site available yet)</b></p> <ul style="list-style-type: none"> <li>- Mr. Ionut Milea, Vice-mayor: 004/0762623286 or 004/0751288104</li> <li>- <i>Planning Office:</i> Mr. Fieraru Liviu</li> <li>- <b>Nehoiu Library:</b> Mrs. Constanta Doman (<a href="mailto:green.blizzard@yahoo.com">green.blizzard@yahoo.com</a>)</li> <li>- <b>Nehoiu Cultural Center</b> – Association for Community Development Nehoiu – ADCN</li> </ul> <p>(see notes and data table)</p>
<p>8. <b>Ocolul Silvic al Academiei Române</b> Dr.Adrian Angelescu, Head of the District</p> <p><b>Romanian Academy Forest District</b> (private owned) (see notes)</p>
<p>9. <b>Ocolul Silvic de stat Cislău</b> Eng. Moise Daniela, Head of the District 004/0730653598</p> <p><b>Cislău Forest District</b> (state owned) (see notes)</p>
<p>10. <b>Ocolul Silvic privat Nehoiu</b> Eng. Dicu Crina, Head of the District</p> <p><b>Nehoiu Forest District</b> (private owned) (see notes)</p>
<p>11. <b>Prefectura Buzău</b> Mrs. Năstase Dorina, Mr. Vasile Popovici Et. 2, room 32A <a href="http://www.prefecturaBuzău.ro">http://www.prefecturaBuzău.ro</a></p> <p><b>Buzău Prefecture:</b> participant at the first presentation of the project in Buzău County ( July 2011), one of the main stakeholders; they provided us support in order to obtain the Statistical Situation of Terrains from two institutions (4 and 5)</p>
<p>12. <b>Inspectoratul pentru Situații de Urgență (I.S.U. Buzău)</b> Lt. Col. Dănuț Nicolae, Chief Inspector, Col. Dan Manciualea, Vice-Chief Inspector <a href="http://www.isuBuzău.ro/">http://www.isuBuzău.ro/</a></p> <p><b>Emergency Situation Inspectorate (I.S.U. Buzău):</b> participant at the first presentation of the project in Buzău County (2011), one of the main stakeholders</p>

Annex 2

<b>DATA COLLECTION (situation at 18.07.2012)</b>			
<b>Source</b>	<b>Obtained</b>	<b>Pending</b>	<b>Other available</b>
<b>Statistical County Direction</b>	Population and residences census (2002 – commune level): buildings per category (#, year of construction), facilities (incl. installation), type of occupancy, area, # rooms per residence; population and residence census (2011 – county level): general info; statistical directory 2004, 2011; locality sheet 1990, 2000, 2010 (commune level); demographic sheet 2000 – 2005 (per commune)	Žiga's questionnaire	Statistical directory 2007
<b>Environmental Protection Agency</b>	Discussion; Žiga's questionnaire		Local action plan for environment (county level) National strategy for sustainable development (national level)
<b>County Agriculture Direction</b>	Statistical Situation of Terrains (SSTs) for 2010 and 2011 (commune level) <i>without</i> property distribution per type of owner	Žiga's questionnaire; SSTs with property distribution per type of owner	
<b>Office for Cadastre and Land Registration</b>		Statistical Terrains' Situation (SSTs) for 1990, 2011 (commune level)	
<b>County Council</b>	Buzău County tourism and agro-tourism development strategy (2010 – 2015); Buzău County (socio-economic) sustainable development plan (2007 – 2013)	Žiga's questionnaire; Old photos of buildings in Buzău County	
<b>Nehoiu local authorities (town hall – spatial planning office, volunteer service)</b>	Discussion; documentation: social investigation (persons affected by 2005 flash flood); registration forms for hydro-meteorological hazards in 2005, 2006, 2010 (from Local	Žiga's questionnaire; Tess and Kathrin's questions	

	Committee for Emergency Situations); geotechnical report for building construction; hydro-technical feasibility report along Nehoiu Valley (2010); technical feasibility report for road construction along Nehoiu Valley (2006); registration forms for compensation (materials of construction and money) for persons affected by 2005 FF; geotechnical report for embankment protection Nehoiu Valley; geotechnical study for a landslide affecting Mlăjet-Trestioara road; contracts for bridge construction (2004, 2005); humanitarian aid documentation after 2004 FF; Chirlești mudflow documentation 2005 – 2012; registration forms for HMH in Chirlești and Nehoiu Valley, 2010; Nehoiu town monography (1996); General Urbanistic Plan - Nehoiu		
<b>Association for Community Development Nehoiu (ADCN)</b>	Archive photos (Nehoiu Valley)		
<b>Nehoiu Library</b>	Archive documents, photos, references, newspaper articles, etc.	Žiga's questionnaire	
<b>Romanian Academy Forest District</b>	Discussion	Žiga's questionnaire	
<b>Cislau State Forest District</b>	Discussion	Žiga's questionnaire	
<b>Nehoiu Private Forest District</b>	Discussion	Žiga's questionnaire	

## Annex 3

### Interview transcripts:

#### 1. Adrian Angelescu – Head of the Romanian Academy Forest District:

- the biggest threat in this area is the pressure to the forests due to economical exploitation; in the last 20 years (after the Revolution) deforestation is the main danger to the natural environment, although this activity is well institutionalized and the law is rigorous; the application of the law is weak and cuttings are significant, especially for valuable species
- the biggest deforestation activities are within the private owned forests
- very weak initiative of reforestation in the near future
- the cutting procedure is done in such a way that there are no clearings (the impact is not so obvious thus afforestation cannot be invoked by the law); the cuttings are selective (the biggest and most valuable species are cut first) and practically, the density and value of the forest decreases in time; the damage to forests is significant due to this type of activities
- the forest can still recover if it is preserved, but this regeneration cycle takes about 150 – 200 years
- there is a constant interest for the exploitation of wood in this area (Buzău Mountains) but if we compare it with other regions in the country (Suceava County, Neamț County, Harghita County, Maramureș region), the exploitation of wood did not reached uncontrollable limits

#### '70 – '80 Big Reforestation National Plan:

- he worked and directed a part of this operation in the area
- in that period in Cislău Forest District there were about 500 – 600 ha afforested per year; all degraded terrains in Cislău, Pârscov and other hilly area were afforested; landsliding activity was reduced due to this operations; in the same time, some bad political decisions resulted in plantation of exotic species which did not adapt to local conditions (e.g. close to Pătîrlagele, pine trees are starting to dry) for different economical benefits
- but, generally, this operation at national scale was unprecedentedly
- until 1984 – 1985, there were about 400 – 500 ha afforested per year for approximately each forest district (Buzău County had 9 forest districts → ~ 3500 – 4000 ha/year in Buzău County)
- the main reason of this action was the political agenda, the foresters had quite a big influence at the highest levels of political decision since they were well represented in the Communist Party; moreover, they were also conscious about the value of this resource (mentality and education)
- that was one of the most prosperous period of forestry in Romania
- the most recent reforested areas ('84 – '85) are not exploited now due to enactment of law (too young to be exploited – diameter of 18 – 20 cm; moreover the wood is not economically profitable); the most valuable trees are the ones with >120-130 years and diameter of 80 – 100 cm

- in the last 10 – 20 years there were no significant meteorological phenomena and the floods triggered were not as big as compared with those in other regions of the country
- there are many low magnitude landslides in Buzău County, but the amount of precipitation is not sufficient in order to trigger high magnitude landslides
- in '79 – '80 in Nehoiu Valley there were high amount of precipitation which resulted in disastrous flash-floods; if the same amount of precipitation would fall today, the consequences would be greater

## **2. Gheorghe Petcu – counsellor, Buzău County Council:**

- In 1872 in Bucharest and than in 1892 - Paris, Bazil Iorgulescu published a book with an old map of Buzău County (see City Council library)

*(For the rest of the discussion, see the attached mp3)*

## **3. Adrian Stan – Chief of Nehoiu Volunteers Service and Civil Protection**

### *Informational flux:*

- He receives messages on the telephone automatically about meteorological warnings
- Generally, all people are responsible for announcing an emergency situation, but in each village there are designated people who are directly communicating with (1) the Volunteers Service or (2) directly call 112 at the Emergency Situation Inspectorate (ISU); ISU than calls the mayor, the vice-mayor and the Civil Protection in the respective locality
- In case of an emergency (flood, landslides, forest fire, etc.) the Volunteer Service is the first at site, and communicates to ISU all information necessary in order to prepare for the intervention

### *Actions:*

- Rarely, when the magnitude of the event (e.g. shallow landslides) is small, the Volunteers Service intervenes without the help of ISU; nevertheless for floods, generally, they require help from ISU
- In an emergency situation the Local Committee for Emergency Situations is constituted; the committee is formed out of president - the mayor of the locality, secretary – the vice-mayor, civil protection (the Volunteers Service), town hall secretary, different directors of organizations and institutions (companies, hospital, cultural center, etc.)
- Nehoiu town has a refugee center for temporary housing (12 places); it was used after the 2005 flash flood by a few families in the locality; generally, people avoid to stay there, they prefer to ask for help at their families, friends

### *Interaction with the local authorities:*

- The volunteers service consists of almost all Town Hall employees, some volunteers from school, veterinary doctors, hospital assistants

- Generally, the entire community is mobilized in case of disasters, but the volunteering activity is not very well understood and/or sustained (it is not an important component of the educational process at national scale)
- Another important problem is the lack of equipment due to absence of funds
- ISU and the local authorities is regularly organizing drills for emergency situations (e.g. in September an exercise for seismic hazard will take place in order to increase the public awareness; another simulation took place recently - a seism leading to Siriu dam break which resulted in a flood; the Siriu and Nehoiu localities were involved together with ISU)
- Other drills were done for earthquakes (evacuation of schools) and fire (for the wood factory)
- No casualties were registered in Nehoiu town (2 persons were killed due to a flash flood which caught them in a vehicles on Păltiniș Valley, Gura Teghii locality)
- Among the hazards, floods and secondly, landslides cause the most significant damages in Nehoiu Valley
- The Volunteers Service is not involved in spatial planning documentation; moreover, there are no hydro-meteorological hazard and risk maps for Nehoiu locality, thus they are not beneficiaries nor contributors
- After each hazardous event, there is a protocol or report in which the chief volunteer registers data about the event (time of occurrence, location, damages produced, individuals affected, etc.); there is no standard format for this protocol and much of the information is unstructured

*Interaction with the community:*

- Telephone is mostly used to warn the population in case of disaster; on Nehoiu Valley there is limited or no signal for mobile telephone, thus only people who have fixed telephone can be warned (this is an important issue since people who are outside the house cannot be reached easily, e.g. forest rangers, children, etc.); moreover, the electrical network has been damaged several times during landslide/flood events
- The settlements along Nehoiu Valley have no sewage system
- Because of topographic constrains, the local people deposit construction materials, wood, debris, etc. along the river channel (the materials are entrained by water during floods enhancing its damage potential)
- He states that deforestation is manageable in Nehoiu catchment and the exploitation is controlled (by the private forest agency – see document *Stakeholders meeting notes, Nehoiu Private Forest District*)
- The most important decision maker during peace time is the mayor
- The Volunteers Service lacks instrumentation for interventions; this (lack of funds, mainly) is one of the main challenges they must face

- Another hazard they deal with in Nehoiu Valley is forest fires (he says that during spring time, they may even have two per day)
- In Romania in general, and Nehoiu locality in particular, prevention measures before crisis time do not form an important part of the risk reduction strategy; the main focus is on response actions
- Before the 2004 and 2005 flash floods the bridges which were destroyed were built out of concrete