5. THE SOCIAL ASPECTS OF CLIMATE CHANGE: ASSESSMENT OF PUBLIC AWARENESS AND PREPAREDNESS

In the previous chapters of this guideline the Common Risk Assessment Methodology were introduced, along with the practice of assessing risks generated by climate change related natural hazards at the local level. It is also important, in a complex research project, such as SEERISK, to focus on the social (human) aspect of climate change and the consequences, in the communities, as well. People living in different socio-economic circumstances, who have different social and educational backgrounds, understandably, react to the impacts of climate change in various ways. Being aware of and being prepared for the impacts of climate change has become indispensable for communities and their institutions looking after the welfare and safety of people. The social aspect of climate change is revealed via an assessment of the level of awareness and preparedness of the local inhabitants and institutions in the pilot area. The identification of gaps between risk exposure and the actual preparedness of local communities can be completed in this way and the possible solutions in the form of recommendations become easier to find.

In the framework of the SEERISK project, the approach and behaviour of the inhabitants were studied by using the survey method (non-representative questionnaire survey), while the approach of the institutions and decision makers was revealed by conducting interviews and scrutinizing planning documents of the local communities (municipalities, regions).

5.1. SOCIAL AWARENESS QUESTIONNAIRE SURVEY IN THE PILOT AREAS

5.1.1. AIMS AND METHODOLOGY

The aim of the questionnaire survey in the pilot areas was to gain an insight into the awareness of and preparedness of the local population for climate change and the related risks. Each pilot area conducted its own survey and prepared an analysis applying a list of criteria that was the same for all project partners. The data gained from the questionnaires were all entered into a Microsoft Excel file in the pilot areas. All the pilot area analyses, as final products of the questionnaire surveys, are text-based but also include lots of diagrams and data tables.

Both pilot studies and the overall, synthesizing analysis (based on survey analyses of six pilot area) were structured in the same way:

- raw results: the distribution of the responses among the possible replies (in %),
- special aspects: studying the distribution of Yes or No responses,
- territorial approach: comparison of the natural and social environment of the survey units within one pilot area,
- combined analyses: horizontal connection between certain questions and the different contexts of the respondents.

BASIC SURVEY PARAMETERS

The total sample of the SEERISK project exceeded 1600 completed questionnaires in the six pilot areas. At the project level,

the survey covered 27 survey units in the six pilot areas and the surveying was completed by almost 90 assessors, during more than ninety working days. (Table 2.). In each pilot area, 0.1% of local inhabitants were contacted. The total number of questionnaires was distributed among the surveying units, according to their share in the total population of the pilot area. The pilot area meant one settlement e.g. town of Siófok or an area with more than one settlement e.g. Velingrad Region.

- about the attitude of people: friendly, response rate is more than 80%,
- about circumstances in which the questionnaire is actually filled in: usually a standard on-street interview process, taking 25-30 minutes on average,
- about the difficulties of conducting the survey: In some cases, demographic features (e.g. low educational level, older age) could affect the understanding of the different questions and terms. The majority of difficulties were rooted in the following:

Country	Number of questionnaires	Pilot area	Number of survey units	Number of assessors	Time of the survey
Bosnia and Herzegovina	200	Sarajevo – Ilidža	4	4	16.09 - 20.09.
Bulgaria	407	Velingrad Region	5	11	13.06.- 04.07.
Hungary	247	Siófok Municipality	5	12	17.06.- 14.07.
Romania	300	Arad	6	52	10.06.- 22.06.
Serbia	274	Kanjiža Municiality	4	8	01.07.- 30.07.
Slovakia	216	Senica	3	1	21.06.- 30.07.
Total	**1644**		**27**	**88**	**Min. 90 working days**

Table 2. *Basic parameters of the questionnaire surveys in the pilot areas, 2013*
Source: SEERISK questionnaire surveys (n=1644)

The international questionnaire survey does not represent the population of the pilot areas in terms of age or educational level for. The explanation is that there are immense differences in the total population of the pilot areas (Siófok vs. Arad) and also that the availability of the census data - which e.g. age representatively could have been based on - differs considerably on the settlement level by the partner countries.

SUMMARY OF THE PROCEDURE OF THE QUESTIONNAIRE SURVEYS

General impressions of the assessors (people carrying out the survey):

- terms and definitions of the different natural hazards (e.g. floods, flash floods, inland excess water) understanding were not so easy for the respondents to understand;
- sometimes respondents found it difficult to evaluate the level of safety.
- In each country, interviewers underwent special training, with a short discussion of the questionnaire clarifying instructions, terms, definitions etc.

By summarizing the results of the questionnaire surveys many common and pilot area specific conclusions could be drawn about

people's attitude to natural hazards and climate change in general. The international comparison does not evaluate and examine the results but simply presents the differences among the pilot areas.

least secondary school level education. The role of institutionalized education as a source of information is more relevant for people with a high and higher than average educational level, but it is a weak source of

Country	YES responses (%)	NO responses (%)
Bosnia and Herzegovina	100	0
Bulgaria	83	17
Hungary	92	8
Romania	98	2
Serbia	99	1
Slovakia	97	3
Average	95	5

Table 3. *Rate of Yes and No responses to the question "Have you ever heard about global climate change?" (percentage), 2013.*[3]
Source: SEERISK questionnaire surveys (n=1644)

5.1.2. SYNTHESIS OF THE QUESTIONNAIRE ANALYSES OF THE PILOT AREAS – A SUMMARY

Knowledge about global climate change and information channels through which it is transfered

According to the survey results, people in the pilot areas mostly have already heard about global climate change (Table 3). Among those who claimed not to have heard about the topic, elderly people, respondents with no academic qualifications or those who have not completed primary school domimate..

For those who have already heard about global climate change, the most important source of information is broadcast media, particularly television. Internet and newspapers also appear among other important sources of information. The frequency of use of modern means of communication (mainly the Internet) is the highest among people under 50 and those who have at

relevant knowledge for elderly people. Organizations such as disaster management and the authorities are sources of information about climate change for the smallest group of respondents. The role of schools is even less frequently acknowledged in this context, which proved to be a common gap identified in almost every pilot area.

Among those who have already heard about climate change, the majority rate its influence on everyday life as *strong* or *very strong* (Figure 46). In most pilot areas, respondents rate the connection between climate change and its influence on their everyday life as average: they do not deny the possible effects but they are still uncertain about it.

[3] Indication of the year in title of all figures in this chapter is a common methodological tool in order to report the date when the survey was conducted. This way information can be defined by the actual figure regardless of the text.

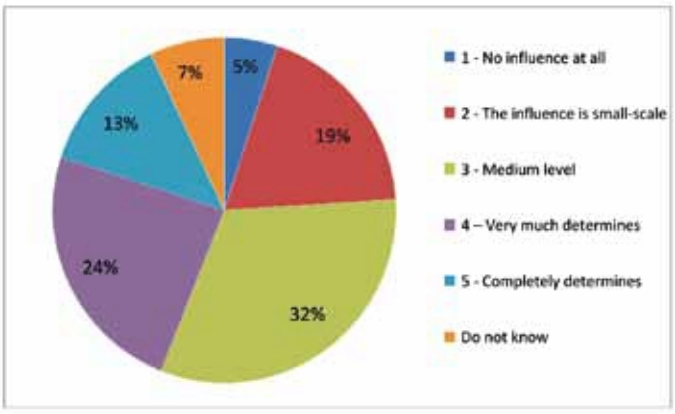

Figure 46. *Evaluation of the influence of global climate change on everyday life for the whole sample (percentage), 2013.*
Source: SEERISK questionnaire surveys (the segment of the respondents who have already heard about global climate change)

More than a half of all respondents think that weather has changed or completely changed in the past 20-30 years and there are less people who are unsure about it (Table 4). The number of people who completely deny changes in weather is rather low in all pilot areas. Young people – mainly under the age of 35– have uncertainties and they more frequently think that climate change has no effect on their everyday life. Older people recognize the signs of climate change. The tendency in each pilot area is such that the higher the educational level, the higher the number of respondents who see the consequences of the changes in climate.

Country	No change has happened (1)	Change has been small-scale (2)	Medium level (3)	Weather has changed (4)	Weather has completely changed (5)	Do not know
Bosnia and Herzegovina	2	4	30	36	27	1
Bulgaria	3	21	34	24	13	5
Hungary	1	20	46	15	6	12
Romania	3	8	19	17	53	0
Serbia	4	7	19	25	45	0
Slovakia	4	14	23	26	22	11

Table 4. *Responses to the question "According to your personal experience has the weather changed in the past 20-30 years / since your childhood?" (percentage), 2013.*
Source: SEERISK questionnaire surveys (n=1644)

EVALUATION OF THE SENSE OF SAFETY AND THE THREAT OF NATURAL HAZARDS

Most age groups are not able to determine precisely whether natural hazards affect their sense of safety or not, but the feeling of insecurity is growing with age. More than 30% of respondents feel rather safe with regard to natural hazards (Figure 47). Also 30% of respondents rate the impact of natural hazards on their sense of safety as very or fully influential, especially in the group of people over 40-45. Generally people over 60 feel more vulnerable.

Among those who faced the dangers of natural hazards in their lives, there are more people who think natural hazards affect them completely or significantly.

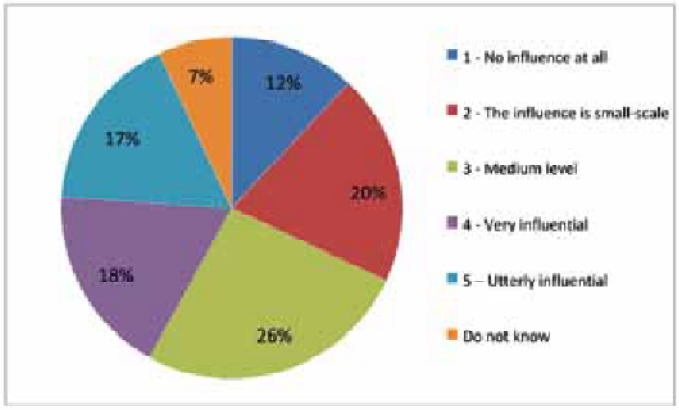

Figure 47. *Average level for the whole sample about the evaluation of the influence of natural hazards on the sense of safety (%), 2013.*
Source: SEERISK questionnaire surveys (n=1644)

Sometimes there is a marked difference between the natural hazards indicated by the respondents and the types of hazards which have been selected to be in the focus of the risk assessment process in the pilot areas or are identified in interviews and planning documents (e.g. in Bosnia and Herzegovina, Bulgaria and Slovakia) (Table 5).

EVALUATION OF THE PREPAREDNESS FOR NATURAL HAZARDS

The most important measures/precautions to be taken by the local people are almost the same in all the pilot areas. At least 40% of people in all pilot areas are taking the following preventive measures: *refraining from dumping waste in public spaces* and *storing hazardous materials safely*. The most frequently indicated measures/precautions aimed at mitigating the possible impacts of climate change show that personal competences and the financial resources of households (especially income) are the most determining factor for respondents' actions and future plans.

Country	1	2	3
Bosnia and Herzegovina	Floods 42%	Flash flood 33%	Inland excess water 25%
Bulgaria	Floods 22%	Flash flood + Hail 21%	Inland excess water 17%
Hungary	Extreme thunderstorms + windstorms 20%	Extreme heat waves 18%	Hail 10%
Romania	Extreme heat waves 36%	Extreme thunderstorms + windstorms + cold waves 31 - 32%	Drought 30% Extreme snowstorms 29%
Serbia	Extreme thunderstorms + windstorms + heat waves + hail 45- 47%	Extreme snowstorms+ droughts 26 - 27%	Floods+ inland excess water 23%
Slovakia	Extreme thunderstorms + windstorms 46%	Extreme heat waves 39%	Hail + drought 32 - 33%

Table 5. *The most important natural hazards which can influence the sense of safety according to the respondents' opinion (%), 2013.*
Source: SEERISK questionnaire surveys (n=1644)

Sometimes also marked differences can be observed between the type of natural hazards influencing the sense of safety and the type of natural hazards causing serious consequences. Damage to the economy and destroyed homes are the most serious tangible impacts according to the surveys.

The real effects of climate change on people's lives can be observed in the responses such as *putting in roller blinds / shutters on windows* or *installing air conditioning in the house/flat*. There is a high number and rate of respondents in all countries who regularly control the physical condition of the house/flat, or have installed weatherproof doors and windows, air conditioning, thermal insulation, or have reinforced the roof.

Fully prepared respondents – or at least those who feel fully prepared – are mostly middle-aged people who received secondary school education, living in the centre of pilot settlements.

In order to have a higher level of protection from natural disasters, the respondents have taken or are planning to take certain measures. Among those, who responded that they *planned to carry out actions within a year* the most important options for measures/ precautions are:

- *reinforcing the roof,*
- *careful selection of the construction site for a residential building,*
- *careful selection of building materials for a residential building,*
- *installing air conditioning in the house/ flat*

People are very aware of the fact that they should not store hazardous materials in their homes in an unsafe way.

Thus, at least 50-60% of respondents are somehow prepared for a disaster. The most common practices are following the official weather forecasts and warnings; storing survival tools, keeping medication and first aid kit at home.

DISSEMINATION OF INFORMATION AND MEANS OF COMMUNICATION

The people contributing to the economy (aged between 18 and retirement age) are less informed about the ways to obtain information and to get prepared.

The majority of people feel they do not get enough information from the official sources about the potential natural hazards and about the ways to get prepared for them, and feel the need to get more information about civil protection duties/actions and about the ways of preparing for disasters. People also pointed out that they would like to get more information.

The majority of interviewees rely on communication channels, such as *state and commercial broadcast media* to get information about the potential dangers and civil protection measures.

In addition to state/national broadcast media, local TV, radio or newspapers are also important information sources for the communities.

The weakest sources of information (less than 15%) are forums/presentations at schools and workplaces. The role of modern communication channels, like the Internet, social media or electronic messages, as ways of obtaining information decreases with the age of respondents. In view of the age structure of the whole sample, it is to be expected that modern means of communication will be less commonly used.

VOLUNTEERING

The majority of the respondents (more than 80% of the whole sample) find it important to take an active part in disaster prevention or rescue efforts: there are no marked differences by demographic features. However, more than 60% have never taken part in any prevention-oriented activities. 18-35 year-old male and elderly respondents indicated to have taken part in such activities. The majority of the people surveyed (more than 70%) are not members of any volunteer civil protection organisation. Their members are mainly young and middle-aged men. More than 50% are ready to take part in relief operations when a real disaster strikes: middle-aged men in particular have confirmed their willingness to participate.

HIGHLIGHTS

DEMOGRAPHIC ASPECTS:

- The depth of knowledge about climate change depends on age structure and educational level;
- The majority of people rely the broadcast media as their source of information - age or educational level do not make any difference in this respect;
- Younger people are often unsure when evaluating the influence of climate change – personal experience is also a dominant factor in addition to educational level,
- Volunteering differs by gender, as dominantly men take part.

NEIGHBOURHOOD-SPECIFIC ASPECTS:

- People living in poor housing conditions or in a disadvantaged social environment feel more threatened by natural hazards;
- The role of local media as a special source of information for people living in rural areas.

SPECIAL ASPECTS:

- Education system and the authorities are considered to be weak sources of information;
- Climate change appears as a factor in the decisions to take measures/precautions aimed at mitigation of the possible damage e.g. putting in roller blinds / shutters on windows or installing air conditioning in the house/flat;
- Personal competence,, based mainly on educational level and the material resources (income) of household members typically influences the level and type of prevention.

COMBINED ASPECTS:

- Among those who regularly use the Internet to get information, there are more people evaluating the effects of climate change as strong;
- There is a connection between personal experience of natural hazards and the evaluation of the sense of safety – the ones having gone through such an event are more sensitive to the issue;
- Among those who have been threatened by natural hazards and who evaluate the effects of climate change as strong, there are more people who have taken steps to ensure a higher level of protection against natural disasters.

5.2. ANALYSIS OF THE INTERVIEWS WITH LOCAL STAKEHOLDERS AND LOCAL PLANNING DOCUMENTS

In the followings segment of this guideline, the findings regarding the level of awareness of stakeholders, along with a preparedness analysis based on qualitative research methods, namely interview and document analyses, will be presented. The application of these methods contributed to a better understanding of the institutional level approach to climate change and preparedness for it and its local consequences. It helped to indentify not only progress, but also shortcomings in these fields.

The interviews and document analysis were consistently conducted at the local level in the six pilot areas of the SEERISK project following the same methodology. The partners conducted a minimum of four interviews for each pilot area, mainly with heads of different organisations, experts on disaster management and local decision makers e.g. mayors.

The interviews centred on the issues of disaster management/civil protection and climate change. The objective was to see the general approach and viewpoint of the ones occupying higher positions in the local society, who have the right and the obligation to formulate decisions on the priorities in the domain of local activities and budget spending. The interviews were semi-guided (a list of questions was provided, which did not prevent gaining information beyond the given scope) and the analysis was structured by five core issues that the summary below follows.

Document analyses focused on local level regulatory and development-oriented planning documents, such as the disaster management plan, the urban land use/regulation plan, urban development concept and strategy, special planning documents on environmental protection. The focus of the analysis was climate change, namely, finding out whether this globally pressing issue appears in the local documents, as a factor influencing daily life, future development objectives, measures and prospects.

5.2.1. INTERVIEW ANALYSES

SUBJECTIVE EVALUATION OF RISK EXPOSURE IN EACH PILOT AREA

The opinions of interviewees about the tangible impacts of climate change vary by partners. In Siófok, Arad, Kanjiža and Ilidža, they agree that impacts of global climate change are detectable, they highlight the palpable changes regarding various weather phenomena. They also clearly link all this to global climate change. In Velingrad and in Senica, however, the interviewees attribute changes to natural cycles in weather and express the need for more thorough research which would prove the link between changes in local weather and the classic interpretation of global climate change.

> *None of the people interviewed stated that there were natural hazards related to climate change. Their observations were about natural cycles and not about a stable tendency towards climate change.* (Analysis of the Local Level Planning Documents p. 8., Velingrad, Bulgaria).

LOCAL REFLECTIONS OF THE NATIONAL LEVEL ORGANISATIONAL CHANGES IN DISASTER MANAGEMENT

Legislative changes occurred in each partner country recently, which resulted a substantial transformation of the organisation of disaster management and the fire departments introducing integration and centralisation aimed at making the system more efficient. Nevertheless some partner interviewees expressed worries that the new management system slows down decision making from top to bottom.

In all the pilot areas, local powers remained in the hands of municipalities, but in extreme cases they need to turn to the higher authorities.

Volunteering has become a key issue. Some partners feel that people are poorly motivated for volunteering, while others found it easier to recruit people.

PROVISION OF INFORMATION ON CLIMATE CHANGE AND PREPARING LOCAL PEOPLE FOR EXTREME WEATHER SITUATIONS

The provision of relevant information to citizens is normally multi-actor based. Centrally determined and locally initiated actions (presentations at schools, leaflets, exercises, life-guarding at the lake) are ideally combined. Cooperation between actors is also a must. However, actual actions and efficiency differ strongly from one pilot area to another. The main target groups are children as they can be reached in an institutionalized form. Annual evacuation simulations are common practice, but barely provide any information, while specific information sources (clubs, extra lessons) are less accessible to children in the pilot areas. Climate change is mostly included in the curriculum but the local aspects and the consequences are hardly ever integrated into teaching.

Middle aged people are the most difficult to reach according to the interviewees. National and local media might reach them, but this method is not effective enough. Municipalities have a little competence in action, they print leaflets, advertise in local newspapers, though they all have a person in charge of civil protection. All partners share the view that preventive activities

need to be enhanced and more efficient and include a range of partners from public institutions such as schools, health centres into the local disaster management unit and even workplaces.

„Local-level hazards generally belong to the topics of form master's classes. For us it is something important as we have 550 pupils and the staff is round 100. We all need to know that various unexpected events can happen – it can be an earthquake, extensive fire or any other kind of event which cannot be foreseen. All these issues are to be part of discussions moderated by the form master allowing the participants to learn what is and what is not to be done in these unexpected situations." (Director of József Beszédes Secondary School, Kanjiža,* Serbia).

EVALUATION OF THE PREPAREDNESS OF CITIZENS FOR DISASTER SITUATIONS

There is general agreement among the interviewees that local people are not interested in the awareness about and preparedness for climate change-related natural hazards.

„People are surely not prepared for that (climate change), only a small percentage of the people are interested in this subject, most live in the moment and they are not interested in the future and the issues like destruction of tropical forests, desertification, shortage of drinking water, acid rain, etc. Here, people are not worried about that, they have not experienced it first-hand." (Head of the Department of Civil Protection and Crisis Management District Office Senica, Slovakia).

These hazards are exceptions, existing only potentially, they will affect their lives the most if experienced. According to the interviewees, the population is not sufficiently prepared for any emergency event.

"We believe that neither local authorities, nor the population are properly prepared to fight the consequences of climate change. We found differences between people of different ages and educational level. Younger and more educated people are more interested in this phenomenon than older or less educated individuals." (a NGO, Arad, Romania).

Irresponsible behaviour of people is evident in their actions, such as building structures that do not conform to the rules stated in local regulations or simple negligence in private properties, which poses a threat to other people's lives in case of natural disasters.

All partner countries consider raising the awareness of local people and increasing their sense of responsibility to be of crucially important.

THE IMPACT OF CLIMATIC ATTRIBUTES AND CLIMATE CHANGES ON URBAN DEVELOPMENT AND MAINTENANCE

The opinions on this issue vary the most among partner interviewees due to the different assets of the pilot areas. There is general agreement among them though that the elements of critical infrastructure (e.g. provision of water and electricity, roads to ensure accessibility) have to be given priority. Siófok and Senica especially emphasized this in relation to water courses and bodies of water (the importance of protective dams, protective works). In Siófok sometimes the large-scale projects are often parts of strategic infrastructure (water management of Lake Balaton, or the national railways) all vulnerable to unprecedented storms. Other partners, Arad, for example, pointed out the significance of the thermal insulation programme for residential buildings and also stressed the need for a coherent policy on green belts and their role in the protection against heat waves. In regions like Kanjiža, the interviewees expressed their concern for agriculture and the related infrastructure. They found

projects aimed at construction and repair of irrigation systems, cleaning and extension of irrigation channels to be the most important of all. There were extreme situations, like in Sarajevo-Ilidža, which have been recently resolved, but were still listed as a problem to be dealt with.

"Unlicensed housing construction occurred particularly just after the end of the war in Bosnia and lasted between 1992 and 1995. The population was exposed to the hazards due to unplanned construction of their homes" (Gap analysis, Sarajevo-Ilidža, Bosnia and Herzegovina).

5.2.2. DOCUMENT ANALYSIS

As the pilot areas differ according to size and territorial, administrative coverage, the examined documents consequently have different coverage and sometimes cannot even be interpreted in the same manner.

Disaster management plans (named differently in the pilot areas, according to the scope of the document) exist for each pilot area. They are all stem from the obligations defined in the legal framework to which they must conform in terms of scope and content. The documents are operative by nature and consequently action-oriented allowing to act in case of disasters of various origins. The analysed documents of Kanjiža and Senica focus specifically on flooding and groundwater, while that of the Velingrad region discusses the what is to be done about natural hazards in general. The plans of Arad County and Siófok Municipality have a wider approach and including man-made hazards, as well. All of the documents have been revised and updated in the past 3 years. These documents are not analytical in a that they do not look for cause and effect relations. The plans of Arad County, Kanjiža, Sarajevo-Ilidža and Siófok mention the concept of climate change, but they deal with the issue in general introductions and treat climate change as the cause of changes which require a new strategy. Each and every document attach increasing importance to prevention, namely, field exercises and stress the significance of cooperation with the relevant authorities (e.g. water management authority) and organisations. The disaster management plans have hardly any cross references with other planning documents – and if a document exists , it is the regulation/land-use plan.

The urban and territorial and land use/regulation plan(s) do not deal with cause-effect relations either (no explanations are provided as to land use regulation in an area) but use the types of data determined by the relevant construction-related legislation From the documents and the interviews with chief architects, it turned out that the impacts of climate change appear in the local regulatory planning documents indirectly and with considerable delays.. Experience shows that the process of amending land use plans requires a lot of time. Land use plans and local construction regulations specify what not to do in a particular area and understandably include no provisions about what to build and how. That is the task of development-oriented local plans, which need to take into account and be based on land use and constriction regulations.

The relevant development-oriented local planning documents (concepts, strategies, programmes) have the same structure for the pilot areas, which consists of the following sequence of steps: situation/status analysis, SWOT, overall objectives, specific objectives (development targets), interventions and projects. Impact analysis, among others, the kind focusing on environmental impact is still not that widespread. Local consequences of climate change are not a prominent topic in these planning documents. The issue appears in the chapters on general *environmental* issues, dealing with both locally and the globally defined problems e.g. air pollution, emissions, deforestation etc. The interventions and projects are hardly ever structured around the

issue of local impacts of climate change. Climate change and the environmental consequences rarely appear even as a horizontal issue, although the European Union directs the attention of the member states to the issue and respects the related investment needs of the partner countries in the 2014-2020 period. The conclusion is that the development-oriented documents need to take into account and incorporate the concept of climate change and conscientiously formulate investment projects with regard to function, location, capacity, energy consumption with a thorough general and local knowledge of climate change.

Local people are supposed to be prepared for the various extreme weather events and should be aware of the term and meaning of climate change. However, there are individuals in the local community, who commit the same irresponsible mistakes year after year, in spite of the negative experiences. Most typical of these is that they fill up the rain water drainage system in front of their properties and build parking places on them. When there is an extreme rainfall producing a lot of water the buildings are flooded and the same people ask for help from the municipality. This irresponsible behavior is repeated and causes damage in other properties too. (Dr. Árpád Balázs, the mayor of Siófok).

Climate change is a specific topic of sectoral plans of environmental protection. In the SEERISK project, not all the pilot areas indicated to have one. As to the cause-effect relation, these documents focus on the cause side, when talking about the interventions and measures, which is the control over human intervention affecting the natural cycles (e.g. decrease of CO_2 emission resulting in global warning). The local adaptation strategy is not a core issue, nevertheless even the national strategies (if they exist) have started to deal with climate adaptation only recently. If local communities have these specific plans, they rely on the relevant national strategy, conforming to EU regulations (objectives) and policy recommendations.