

Social Expectations

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The Maros/Mureş is our common heritage. It is has to be managed not just for the sake of industry and agriculture, but also for people living at the settlements along the river. Therefore, for the achievement of a successful and sustainable management the role and opinion of local societies is highly important.

As it was previously shown, the river has been exerted to large scale direct and indirect human interventions with positive and also negative outcomes. The most current problems from a geographical and hydrological aspect are related to changes in channel dynamics due to significant sand and gravel extraction and decreasing water supply as a result of climate change. These problems are already altering the appearance and the environment of the river and will determine how it will look like in the future.

The main questions in the last phase of the research were: what environmental conflicts do people realise on the two sides of the border? Is the Maros/Mureş important in this respect? How do local people use and perceive the river? And finally, what are the key expectations in terms of utilisation and management?

Methods

In order to develop a complex view on the attitude and expectations of people concerning their environment and the Maros/Mureş river, several activities were organised during the project. Among these the most important was a social survey in October 2011, during which more than 1000 people, living at towns and villages located along the river, were questioned on the issues mentioned above. Besides, workshops and meetings were held at various locations, where the scientific results were introduced for locals and stake holders and participants were asked about their ideas and opinion on the river and its future.

Before performing the survey itself, orienteering interviews were made, during which some residents of Apátfalva, Makó and Lipova were asked on the environmental issues of their settlement. These interviews also provided an opportunity to test the

preliminary questions of the survey. The results of this qualitative analysis provided the base for the generation of the questions applied in the direct, quantitative phase of the research. This procedure increased the reliability of the survey, as our preliminary expectations concerning the possible opinion of the people could be tested and filtered.

In its final form the questionnaire contained 32 questions. Most of them were closed-ended, i.e. the respondents could choose from predefined answers. However, there were also some open-ended questions, where respondents could articulate comprehensive ideas and opinions. The average time of completing an interview was 10–15 minutes.

Fig. 1. – page 133

The investigation was made with the participation of university students who were already experienced in social surveys. They formed groups of two, consisting of one Hungarian and one Romanian interviewer (Fig. 1). In all 22 groups were participating in the survey, which was carried out at the following locations: Sâmbăteni, Cicir, Mândruloc, Arad, Pecica, Semlac, Magyarcsanád, Apátfalva, Makó, Kiszombor and Maroslele (Fig. 2).

The number of required interviews at a given settlement was determined on the basis of settlement's weight concerning the total population of the region. This way the most questionnaires: 345 and 230 were planned for Arad and Makó, while the least: 20 and 25 for Magyarcsanád and Sâmbăteni. In all, 1062 surveys were completed finally.

The survey was made using the random walking method, meaning that the interviewers were allowed to ask anybody within a previously set zone. The delineation of interview zones also prevented the repeated questioning of respondents (Fig. 3).

Fig. 2. – page 134

The overall methodology of the research was both qualitative and quantitative. As Letenyei (2004) emphasizes the two approaches can and should be combined in social researches, as certain issues can only be evaluated on the basis of expert oriented interviews, while the overall representativity can only be reached by alienating ourselves from the respondents and using statistical methods (Bryman 2001).

During social surveys representativity is a key issue for increasing the reliability of the investigation, however, reliability does not automatically mean that the results are valid at the same time. By definition the accuracy of the survey is measured by its reproducibility, i.e. the possible difference between the results of repeated data acquisition (Babbie 2003, Firebaugh 2008). Validity on the other hand means whether the answers and results received for the research questions are relevant or not (Babbie 2003, Firebaugh 2008). This highly depends on good question formulation, and that responders understand the questions and provide meaningful answers (Letenyei and Rác 2011). Reliability in general can be increased by random sampling and larger samples (Neuman 2006). In case of the present research the typical ways of random sampling (from phone books or municipal records) were not possible to

use at the given resources and time. Representativity and reliability was partly ensured by questioning a large sample (0.2 % of population at Arad, 1.0 % at Makó and 1.2 % at other settlements) and by designating separate interview zones at each settlement either to cover the entire settlement, or to represent each of the urban geographical districts (Fig. 3). The validity of the surveys was based on preliminary interviews and the local experience of experts studying the geographical and environmental problems along the river for a long time. The combination of qualitative and quantitative techniques provided thus the means of a reliable and valid.

The questionnaire was mostly made up of closed-ended nominal, ordinal and multi optional questions. Warm up questions were related to the major challenges of the settlement and values worth of protection. In the second set of questions respondents were asked about environmental issues in general, then about problems related to the Maros/Mureş itself. Subsequently, the relationship of locals to the river was explored, i.e. how frequent and what for they visit it. Finally, their preference concerning future management and mitigation of problems was investigated. The interview was closed by entering some of the social parameters (age, gender, education, occupation) of the respondent.

Fig. 3. – page 136

Results

Evaluation of settlements and their environment

The first questions of the survey were related to the general state of the settlement and its environment and the importance of environmental issues in comparison with other, mostly social and economic problems.

We found that 73% of the responders do like the settlement where they live, however, there were great differences in terms of the two countries. Interestingly, nearly 81% of Romanians were very satisfied, while only 63% of Hungarians felt the same. This can probably be related to the west-east economic division of both countries (Arad County is part of the western developed region of Romania, while Csongrád is among the less developed territories of Hungary), making Romanians a little more satisfied. Differences in terms of settlement type were not clear. Although Arad and Pecica scored 3.78 and 3.68 on a scale of 4, the largest value was reached at Maroslele: 3.80. In the meantime, the least favoured settlements were Magyarcsanád (3.15), Makó (3.33) and Cicir (3.33).

The general state of the settlement could be evaluated on a 5 point rating scale. In this respect the results were even more striking. A significant break was experienced in values, i.e. Hungarian citizens evaluated the state of their settlement in average to 3.50, while in Romania this value was 3.85 (Fig. 4).

Fig. 4. – page 137

Based on these answers, we expected that Romanians will be positively biased in terms of the state of environment as well. However, this was not the case, since on a 5 point scale they environment scored 3.39 while in Hungary it reached 3.66 (Fig. 5). According to locals, environmental conditions (water, air, soil, nature) are the best around Kiszombor (3.98), Mândruloc (3.89) and Maroslele (3.88), while the worst values were reported not surprisingly from Arad (3.26) (the largest, most industrialised settlement), though Magyarcsanád (3.26) and Sâmbâteni (3.38) were represented also at the lower end of the list (Fig. 5).

We attempted to evaluate the above results on the basis of sociological parameters (gender, age, education) as well, but in general no significant relationships were realised, the only exception was that the state of environment was evaluated worse by people having a university diploma.

Fig. 5. – page 138

The first group of questions was finished by asking people on the greatest problems of the future. Responders could answer freely, and surveyors marked the most appropriate point from a predefined list, composed on the basis of the orienteering interviews. As expected, the greatest issue on both sides of the border was unemployment. The second greatest problem, municipal waste water was mostly appointed at villages (Kiszombor, Mândruloc, Cicir). The third most important issue was however environmental deterioration (Fig. 6). In all, 7.3% of the responders thought that this can be a great problem in the future. Mostly the residents of Cicir, Sâmbâteni and Mândruloc were concerned of environmental problems. There is a great difference, however, between Romanian (11.4%) and Hungarian (3.1%) values, partly biased by the results of Arad (13.9%) (Fig. 7).

Fig. 6. – page 139

Fig. 7. – page 140

Environmental problems along the Maros/Mureş

The following questions were already focusing on the Maros/Mureş. The river was ranked to be the 2nd and 3rd most important natural value at Hungarian and Romanian settlements, respectively (Fig. 8). The first place was taken by forests in Romania and by clean air in Hungary. It is noteworthy that in case of Arad the importance of forests (40%) outscored clean air (27%), which we expected anyway to be on the first place. People mentioned the Maros/Mureş in the first place at the highest rate in Makó (33%), Apátfalva (31%), Mândruloc (29%) and Arad (28%) (Fig. 8). The Maros/Mureş was preferred the most by respondents with a university or college degree, as 32% of them considered the river as the most important natural value in the area. In terms of

people of secondary and primary educational background these values were 25% and 19%, respectively. Those who visit the Maros/Mureş regularly (73% of respondents) were more concerned of the river (27%) and forests (34%), than those who, not. The later group voted mostly for clean air (46%).

The next question was open-ended, and inquired about the last environmental problem the responder had met. In all 25% of the people reported something in relation with the river. The settlements where Maros/Mureş related answers were the most frequent were Arad (33%), Mândruloc (60%) and interestingly Apátfalva (47%). Responders at Mândruloc emphasized the destruction of the river bank by mining, while at Apátfalva people were mostly concerned of pollution and the state of forests along the river.

Fig. 8. – page 141

Finally, respondents were asked to select 3 environmental problems from a list of 7 which affect the Maros/Mureş the most. On both sides of the border solid-waste disposal was considered to be the most important issue (Fig. 9). This is understandable, as plastic bottles drifting on the river and heaps of garbage on the floodplain are well visible and understandable problems for everybody (Fig. 10). Based on the results, however, the problem of solid wastes is more apparent along the Romanian section. If settlements are taken then the people of Apátfalva (91% of respondents), Semic (86%) and Mândruloc (83%) are the most aware of this problem.

The second and third places were taken by industrial and sewage water contamination (Fig. 9). Although water quality has improved considerably through the years (PMBH Mureş 2009), the Maros/Mureş has still got a quite bad reputation among locals in this respect. Sewage water was highlighted by the greatest number of respondents in Arad (71%) and Pecica (69%), while industrial pollution was mostly emphasized in Arad (50%) and Apátfalva (50%). Interestingly, with the exception of the residents of Arad, Romanian respondents were significantly less worried of industrial pollution, than their Hungarian counterparts. During preliminary interviews we also realised that Hungarians say that water quality problems are mostly related to Romanian industry.

Tree logging seems to be a significant issue on both sides of the border (Fig. 9), however, Hungarians assume it a slightly greater problem, which is interesting if we consider that Romanian respondents were much more concerned about the state of forests in an earlier question. A possible reason can be that at settlements, such as Cicir, hardly any forests remained by now.

According to Romanian people (35%), gravel and sand mining proved to be the fourth most important environmental problem affecting the river (Fig. 11). Not surprisingly, residents of Cicir (93%) and Sambateni (92%) were very much concerned, though one-third of respondents at Arad were also emphasizing this issue.

In all, we can see that locals are usually aware of the problems in relation with the Maros/Mureş. However, they are mostly concerned of those things which are apparent at their settlements and they are unaware of overall processes along the river.

Fig. 9. – page 143

Fig. 10. – page 144

Fig. 11. – page 144

Relationship to the river

The third block of questions was aiming to explore the relationship of locals to the Maros/Mureş. From those surveyed 73% claimed that they visit the river regularly. There is a slight but not very significant difference between genders in this respect, as 78% of men and 68% of women answered yes for this question. A much more significant dependence was found in terms of the educational level of respondents. Only 49% of people with primary education visit the river regularly, while in terms of those having secondary and tertiary levels this proportion grows to 75% and 89%, respectively. This observation can be explained by various factors, e.g. differences in the overall mobility, economic situation and age of the respondents. However, we did not expect such a strong relationship in this respect. Concerning the spatial differences we found that on the Romanian side 81%, while on the Hungarian side only 63% of people visit the river from time to time (Fig. 12). This value is partly biased by Arad, as the river flows through the city. However, if we exclude the results of Arad, Romanian values are still higher (70%).

Visiting the river seems to have a clear relationship with the physical distance and the accessibility of the riverside from the settlement. It is noteworthy, however, that for example at Kiszombor only 41% of respondents visit the river, while in case of Maros-lele, situated much farther from the river, this value is 66%. The result received at Makó (68%) was also lower than expected, since here the accessibility is fairly good and various recreational facilities are available on the riverside (Fig. 12). However, the most important thing is that more than two-third of local people is related in some ways to the river, thus their needs and expectations have to be considered during river management.

Fig. 12. – page 146

Those who visit the river regularly were also asked for what purpose they do this. Respondents could choose from several options (Fig. 13). The most frequently marked activities, regardless of location, age, gender and educational level was walking on the riverside, fishing, and bathing in the river (Fig. 13). In Romania 89%, in Hungary 80% of respondents who visit the river go there with the purpose to take a walk. The difference is not significant and caused mainly by the results of Arad (93%). Around one-fourth of the people visiting the Maros/Mureş do fishing and angling (Fig. 14). The third most popular activity was bathing. In this respect Hungarian results were significantly higher, which is probably due to the availability of more facilities along the Hungarian section. Similar differences were found in case of water sports and agricultural activity, referring to a more diverse use of the river on the Hungarian side (Fig. 14).

Changes and expectations

In the final part of the survey people were asked to evaluate the changes experienced by them and the attitude and expectations of local communities in terms of future developments. In all 59% of respondents reported that the state of the river is changing. The answers varied only in relation with the nationality of respondents, namely 67% of Hungarians and 54% of Romanians observed a change. In terms of the direction of change (positive or negative) results were very similar on both side of the border. In all 70% of respondents realising a change reported negative processes. The distribution of answers was only affected by settlement type, namely positive change was marked a little more frequently by urban residents (33%), than people living in villages (22%). The reason behind the difference might be that people living in Arad, Makó or Pecica can experience more developments next to the river.

Respondents were also asked what information circulate on the river in their community. Most of the answers were related to increasing pollution and decreasing water levels as the most widely known and believed changes. Positive answers were mostly referring to riverside developments in Makó and Arad.

We also asked locals whether their community respects the river and its natural values or not. The evaluation was made on a 4 point rating scale. Only slight differences were found between the two countries, as average values were 2.49 and 2.69 in Romania and Hungary, respectively. Therefore, on a community level people suggest that the river is slightly more valued in Hungary than in Romania. In terms of different settlements we did not find significant variability either. The lowest settlement averages were measured at Arad (2.41) and Mândruloc (2.42), while the highest at Kiszombor (2.97) and Magyarcsanád (2.75). It is noteworthy that the average result among people who do not visit the Maros/Mureş regularly was 2.73, while among those who have a more direct relationship to the river it was 2.53, suggesting that the later group is more pessimistic or more sensitive concerning the state of the river and its environment.

As the local use of the river is greatly determined by the state of the riverside we asked the opinion of people how well the riverside is managed at their settlement, and what impression it makes for them. The evaluation was made again on a 4 point rating scale. In this respect a significant difference was found between the two countries: Romanian and Hungarian settlements scored in average 2.17 and 2.90, respectively (Fig. 15). In Romania the worst results were received at Cicir (1.33) and Mândruloc (1.66), while the conditions at Arad (2.28) and Pecica (2.15) seem to be better (Fig. 15). Thus, great scale mining and the destruction of natural values are striking for locals too. On the other side of the border settlement averages were significantly higher. Villages where the riverside is unmanaged scored around 2.5, while Makó earned an outstanding

3.05 (Fig. 15), which is definitely due to the recreational developments (adventure park) made lately on the riverside.

Fig. 15. – page 150

We found that there are significant differences in how many people are interested in environmental issues on the two sides of the border. On a 3 point scale Romanian citizens (reaching 2.45) proved to be much more concerned, than their Hungarian counterparts (2.15). We assume that this is because in Romania and especially along the Maros/Mureş environmental deterioration is more advanced and obvious. This was also proved by another question, inquiring on the severity of environmental pollution on a local level. On a 4 point scale Romanians considered the problem more severe (3.19), than Hungarians (2.86).

The final question of the survey aimed to explore the opinion of people on the acceptable degree of human intervention on the Maros/Mureş. Answers were not influenced by the gender, age or educational level of respondents, however, there were some remarkable differences between the two countries. In average 17% of respondents said that no intervention should be allowed on the river, but in this respect the Hungarian value (22%) was significantly higher than the Romanian (12%) (Fig. 16). The refusal of interventions was the highest at Apátfalva (27%), Sémlyac (26%) and Makó (25%).

The greatest difference was observed, however, in terms of interventions related to tourism. It is striking that Hungarian respondents (26%) seemed to be much less supportive in this respect, than Romanian (51%) people (Fig. 16). Based on the difference we assume that Hungarians are either pessimistic in terms of developments, or they are not aware of the river's touristic potential. On the other hand Romanian residents probably see an important opportunity in developments or simply they think that any soft interventions related to tourism would help to improve the deteriorated environment of the river.

Fig. 16. – page 152

Not surprisingly, flood protection was the most supported type of possible interventions (60%), and it was equally accepted on both sides of the border (Fig. 16). Nevertheless, we expected higher values in this case. A possible explanation for lower support can be that according to a previous question only 56% and 44% of respondents are afraid of the floods of the Maros/Mureş in Hungary and Romania, respectively. This result is especially interesting in case of Hungarian settlements, which are more endangered (most of the Romanian settlements surveyed are situated well above the flood level of the river), and suggests that the memory of the 1970 catastrophic flood is fading.

Hard interventions were less favoured by local people, though Romanian residents were significantly more supportive. 25% of them said that interventions related to the improvement of river navigation (dredging, constructions of stone structures)

are acceptable (Fig. 16), while in case of Hungarian residents this value was only 15%. Finally, in average only 11% of the respondents said that industrial interventions such as mining should be allowed in the future. In this respect the values measured in the two countries were less different (Fig. 16).

Conclusions

In this section we have introduced the results of our survey that was made in order to map local attitudes concerning the river, its environment and its future management. The main conclusions in brief are the following:

- Although Romanians were more satisfied with the general state of their settlement, than Hungarians, they seemed to be rather worried about the status of the environment.
- Based on local opinions, the deterioration of environment is a very significant issue in Romania. Hungarians reported fewer problems.
- As a consequence, Romanian people are more concerned of environmental issues and environmental protection.
- People are equally concerned of the state of the Maros/Mureş on both sides of the border. In Romania, however, the protection of forests seemed to be a more crucial issue for locals.
- The most visible and therefore the most frequently mentioned environmental problem is solid waste disposal.
- Although water quality has improved since the 1990s, the bad reputation of the river in this respect remained.
- A considerable proportion of people visit the river regularly, and the most popular activity is walking on the riverside.
- Riverside developments characterise mostly urban settlements, therefore, people in villages are less satisfied with the condition of the river.
- Respondents assumed that the Maros/Mureş and its natural values are respected slightly more by local communities in Hungary.
- On both sides of the border people see rather negative changes in the state of the river. Nevertheless, they are mostly concerned of things affecting their close environment.
- People are rather against the industrial utilisation of the Maros/Mureş, developments related to tourism were supported less than expected in Hungary and the most accepted interventions are related to flood protection.

In all we found that people living along the lowland section of the Maros/Mureş are a little pessimistic concerning the present and the future of the river. We assume, however, that there are certain misbeliefs on a community level in relation with the general problems affecting the river. Consequently, we think that the informing of people on apparent processes would be very important. This way they would accept future management decisions and activities more easily. As seemingly there is a considerable demand for the recreational use of the river, the supporting of riverside developments would be highly desirable. We assume that this way the relationship of local people to the river would be more direct, and the necessary improvement of environmental conditions, especially in Romania, would attract more people to the Maros/Mureş in the future.

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