

## PRELIMINARY DATA REGARDING THE EVALUATION OF THE STUDENTS' ENVIRONMENTAL PROTECTION BEHAVIOUR

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**Abstract.** Ağrı city is the capital of province with the same name located in the eastern part of Anatolia. In 2010, the region counted 542,022 inhabitants. The Murat River (Turkish: Murat Nehri) or the Eastern Euphrates is the major source of the Euphrates. Since September 2011 we have started an activity regarding the scientific works about the Murat River, especially its sector located within the city. There was mainly studied the students' opinion about strict environmental issues - the positive results makes possible future actions, which suppose engaging young generation as volunteers in environmental protection actions and elaboration of educational projects.

**Keywords:** environmental education, Murat River, Ağrı city.

**Rezumat. Date preliminare privind evaluarea conduitei studenților față de protecția mediului.** Orașul Ağrı este capitala provinciei cu același nume localizată în partea de est a Anatóliei. În anul 2010 regiunea număra 542.022 de locuitori. Râul Murat (în limba turcă, Murat Nehri) sau ramura estică a Eufratului este ramura majoră a Eufratului. Din luna septembrie a anului 2011 am inițiat o activitate științifică asupra Râului Murat în special asupra sectorului localizat în oraș. A fost analizată mai ales opinia studenților privind problemele de protecție ale mediului. Rezultatele pozitive fac posibile acțiuni viitoare de antrenare a generației tinere ca voluntari în acțiuni de protecție a mediului și elaborarea unor proiecte educaționale.

**Cuvinte cheie:** educație ecologică, râul Murat, orașul Ağrı.

### INTRODUCTION

Ağrı city is the capital of the region with the same name and is located in the eastern part of Anatolia. With a surface of 11,376 km<sup>2</sup>, the region is bordered to the south by Van and Bitlis regions, in the west by Mus and Erzurum, in the north by Kars and Iğdir and in the east by Iran. The number of Ağrı inhabitants was 530,879 in 2007 and increased to 542,022 in 2010 (WIKIPEDIA 1).

Ağrı City is crossed by the Murat River. The Murat River (Turkish: *Murat Nehri*) or the Eastern Euphrates is the major source of the Euphrates. It was also called Arsania (Armenian: Արսանի) in antiquity. The river originates near Mount Ararat north of Lake Van, in eastern Turkey, and flows westward for 722 km (449 mi) through mountainous area. Before the construction of Keban Dam, the Murat River joined the Karasu 10 km (6.2 mi) north of the dam site and 13 km (8.1 mi) north of the town of Keban (WIKIPEDIA 2).

The number of scientific papers regarding the Murat River is relatively reduced. If the geological structure was quite well studied (DEMİR *et al.*, 2008), there is only little information about the river biodiversity. An interesting paper refers to the parasites of fish living into the Murat Rivers (ASLAN, 2009).

In 2009, it was built a dam in Ağrı region, the costs of the investment reaching 119,856,806 TL. The dam is equipped with three Francis turbines and the production of electric energy is estimated to 129,882 GWh/year. The mean annual temperature of the Murat River is 6.1°C; one third of the year the Murat River is covered by snow. The economy of the region is represented by two bakeries, a sugar factory, two brick workshops; the inhabitants' traditional occupations are agriculture and livestock (EKOREK, 2008).

When the dam was built, there was achieved a well-documented study about the Murat River; although the project stipulated the construction of an experimental facility for wastewater treatment (approximately 150 l/day/inhabitant) (EKOTEK, 2008), our observations in the field have shown that the city sewerage system discharges directly into the Murat River (Photo1). In the urban zone we noticed waste of various origins discharged directly into the river (Photo 2); however, the most concerning issue is the construction of a waste water discharge station in the immediate proximity of the river (Photo 3). Moreover, in some areas of the city, the sewerage pipes discharge directly into the river (Photo 2).

### MATERIAL AND METHODS

Since September 2011 we have initiated an extensive documentation activity, which has several directions: one of them is a research study and aims at evaluating the saprobity degree of the Murat River using ciliates; the preliminary data have already been used in the elaboration of a recent scientific paper (KERKMANN *et al.*, 2012).

Another important part of this activity regards the evaluation of environmental education degree of the new generation. We elaborated an original questionnaire, the sets of questions covering a wide range of environmental issues (students' opinion regarding air pollution, the state of roads, few aspects regarding social behaviour, test regarding the students' receptivity towards the European system of waste collection, etc.).

In order to test the students' receptivity regarding environmental pollution issues, there was made a questionnaire of 45 questions about the Murat River and Ağrı city pollution. Two hundred students of the Education

Faculty were interviewed; the age of the subjects varied between 19 and 23 years old, (79 girls and 121 boys). The target group was chosen taking into account that their opinion about environmental protection is complete (they learned about environmental protection in school).

This test was performed in order to achieve an educational project focusing on a correct environmental education and initiation of voluntary activity for waste cleaning of Ağrı streets and the banks of the Murat River. These 45 questions were grouped in few larger subjects (city pollution, the Murat River pollution, testing availability for voluntary actions, some psychological aspects, etc.): the versions of answers were clearly formulated leaving no room for ambiguity. The results are expressed as a percentage.

## RESULTS AND DISCUSSIONS

The 45 questions (Table 1, Photo 4) addressed to the students were grouped in a few categories concerning air pollution, the Murat River pollution; there was also tested the students' opinion concerning the possibility to adopt the European system of waste collection. Another group of questions tested the students' availability to act as volunteers for waste collecting from Ağrı streets and the Murat River banks.

The interviewed students are pessimistic when asked about the tourist potential of Ağrı city and its present state (Question 3 – only 15% answered positively!) and also the town future evolution in this direction (Q1, Q32); despite their attitude, they wish a resort in their town (big hotel) built from a project sponsored by the City Hall (Q2-73%).

Another group of questions was made to test the students' capacity of observation regarding the state of Ağrı main streets (Q5,Q7,Q10,Q11).

Only 8.5% of the interviewed students believe that Ağrı streets are clean, considering that a greater frequency of the sanitation is quite necessary (Q10-94%); there should be also mentioned the adherence tendency, at least at mentality level, to the European system of streets cleaning with detergent (Q11-64.5%); the percentage is encouraging and confirms one time more that Turkey certainly goes on the right way towards the integration in the European Union, using the most important element as modernity resort, namely the new generation's mentality.

The important positive answers percentages regarding selective waste collection and their recycling (Q12-96.5%; Q13-94%) support the previous supposition.

A percentage of 71% of the students were open to the possibility of building a bike lane, especially because many of Ağrı's inhabitants use this means of locomotion to cross the city (Q38). The question was introduced by chance because the Project of İbrahim Çeçen University includes such facility in the Campus area (personal communication of the Rector, Professor Dr İrfan Aslan, during the Art and Education Faculty meeting in January 2012).

An important percentage of the interviewed students (71%) believes that Ağrı air is polluted (Q6) and it is necessary to increase the surface of green spaces into the city area, especially into schools gardens (Q39-94.5%) but also on the main arteries of the city (Q37 - 94.5%). The students are sure that organic pollution registered in the city can be the reason for somatic illness (Q43-72%), but also for psychic perturbations like depression or nervousity (Q44 - 81%,Q45 - 94.5%).

The students are flexible and confident in the projects of the City Halls regarding the construction of new residential districts or enlarging the truck park for waste collection (Q35-95.5%, Q23-88.5%) (<http://www.agri.bel.tr/>).

However, the biggest set of questions (14) was dedicated to the Murat River, especially to the segment crossing the city. The percentage of the students' positive answers emphasizes contradictory results. Moreover, despite the students' ability to recognize a polluted ecosystem like the Murat River (Q18-68.5%, Q19-56.5%), characterized by the necessity of rehabilitating its banks into the urban area (Q20-92%) and of regularizing its course by removing silt, they did not know that the sewerage system discharges directly into the river (Photo 1) (Q25-11%), as well as the sewerage pipes (Photo2) (Q27-9.5%,Q28-42.5%,Q29-29%).

Despite the fact that 35% of the students have no information about the legislation of environmental protection in Turkey (briefly illustrated in Baraj's project EKOTEK, 2008), they consider environmental education study as important (Q16-94%) and are ready to make voluntary work for the sanitation of the main streets (Q31-54%). Moreover, their opinion is favourable to the involvement of categories of inhabitants in the collection of domestic waste from the city and the Murat River banks (Q17-90.5%, Q30-85%). Finally, the students are ready to contribute to the formation of correct environmental protection behaviour of their children (Q33-96%).

Table 1. Questionnaire applied to the target group from the Faculty of Education.  
Tabel 1. Chestionar aplicat grupului țintă de la Facultatea de Educație.

No.	Question	Yes number of students	No number of students	I do not know number of students
1	Do you see Ağrı region as a region with tourism potential?	33.5%	62%	4.5%
2	Do you think that the City Hall should make a project for a hotel complex in Ağrı city?	73%	20%	7%
3	Do you think that Ağrı city is ready to receive tourists?	15%	80.5%	4.5%
4	Do you think that Ağrı city is polluted?	78%	19.5%	2.5%

5	Do you consider that the streets of the city are clean?	8.5%	38.5%	53%
6	What do you think about the urban air? Is it clean?	28.5%	68%	3.5%
7	Do you think that there are streets in the city which should be paved?	2%	97%	1%
8	Do you have light industry in your town?	28%	50%	22%
9	Do you think that Aġri city is affected by the pollution generated by this industry? (sugar factory for example)	11.5%	72%	16.5%
10	Do you consider that the main streets of the city should be hygienized more often?	94%	6%	-
11	Do you think the main streets should be cleaned with detergent as in the European system?	64.5%	30.5%	5%
12	Do you think that waste should be collected separately (paper, plastic, glass and organic household waste) according to the European model?	96.5%	2%	1.5%
13	Do you believe in recycling of some materials like glass and paper?	94%	6%	-
14	Do you think that there must be introduced fines for those citizens who polluted the city?	84.5%	11.5%	4%
15	Do you think that the City Hall must develop projects to reduce pollution in the city?	94.5%	4%	1.5%
16	Do you think that environmental education of students is important?	94%	5%	1%
17	Do you consider it is important to involve pupils in activities raising the city's household garbage? (volunteer for environmental protection?)	90.5%	5.5%	4%
18	Do you think that the Murat River is polluted?	68.5%	7.5%	24%
19	Do you think that the Murat River water can be dangerous for people's health?	56.5%	13.5%	30%
20	Do you think that the river banks located in urban areas should be landscaped?	92%	3.5%	4.5%
21	Do you think the river bed should be cleaned of alluvia? (sediments)	63.5%	18.5%	18%
22	Should there be built a swimming pool /strand for the city residents near the Murat river?	46.5%	40%	13.5%
23	The City Hall has purchased new sanitation trucks. Do you consider the investment necessary?	88.5%	5%	6.5%
24	Is there a sewage network of the city?	20%	80%	-
25	Do you know if the city sewage system discharges in the Murat River?	11%	16%	73%
26	Is there a wastewater treatment station before being discharged into the River Murat?	7%	31%	60%
27	Do you know if in the town there are domestic sewage pipes that discharge directly into the Murat River?	9.5%	17.5%	73%
28	Did you see if there are domestic wastes discarded directly into the river?	42.5%	13.5%	44%
29	Do you consider this detail as important?	29%	6.5%	64.5%
30	Do you think that Aġri citizens could help to the depollution of the Murat River?	85%	15%	-
31	Would you like to participate as a volunteer to clean Aġri city?	54%	32%	14%
32	Do you see Aġri as a tourist town in the future?	36%	52%	12%
33	Are you willing to talk to your children about how important it is to keep the city clean?	96%	3.5%	0.5%
34	Do you know if sometimes there are problems due to the Murat River floods?	16.5%	83.5%	-
35	The City Hall develops a project for the construction of new residential districts. Do you agree?	95.5%	3%	1.5%
36	Do you consider that it is required a larger surface covered by green spaces in the city of Aġri?	97%	1.5%	1.5%
37	Do you consider as required tree planting along the city main arteries?	94.5%	2%	3.5%
38	Do you consider as useful the construction of bike lanes on the city's arteries? (as the European model, for safety and decongestion of traffic).	71%	17.5%	11.5%
39	Do you considered necessary the arrangement of green spaces in school gardens?	94.5%	4.5%	1%
40	Do you know if there is current legislation for environmental protection?	35%	17%	48%
41	Is there any discharge into the Murat River?	7%	33%	60%
42	Would you like the waters of the Murat River to be cleaner?	93.5%	5%	1.5%
43	Do you think organic pollution may cause diseases in Aġri city?	72%	15%	13%
44	Do you think environmental pollution in Aġri may generate stress and depression?	81%	12.5%	6.5%
45	Do you consider that environmental pollution may cause psychological pollution?	94.5%	4%	1.5%



Photo 1. The Murat River – the sewerage system discharges directly into the river. / Foto 1. Râul Murat – sistemul de canalizare deversează direct în râu (original).



Photo 2. Discharge pipe of domestic wastewater in the Murat River (image taken in Ağrı city). / Foto 2. Deschiderea conductei cu ape menajere în râul Murat (fotografie realizată în oraşul Ağrı) (original).



Photo 3. Discharge of wastewater in the Murat River (image taken in Ağrı city). / Foto 3. Deversarea apei uzate în Râul Murat (imagine realizată în oraşul Ağrı) (original).

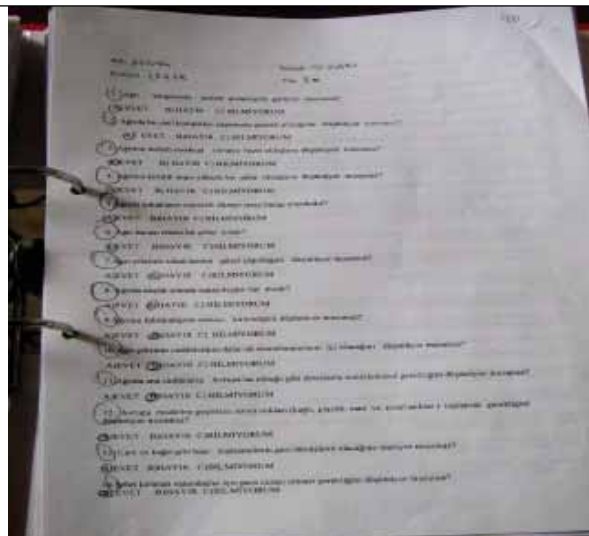


Photo 4. Questionnaire applied to the target group from the Faculty of Education. / Foto 4. Chestionar aplicat grupului țintă de la Facultatea de Educație.

## CONCLUSIONS

So, after applying the questionnaire, we can draw some conclusions:

- The students observed some of the main problems regarding the pollution of Ağrı and of the aquatic ecosystem represented by the Murat River.
- The students are open and flexible regarding the adoption of the European system to selective waste collection, waste recycling and street cleaning with detergent, probing a mentality that will certainly ensure the success of Turkey in the process of European integration.
- They demonstrate advanced civic consciousness being ready to take volunteering actions for the sanitation of the city and the Murat River.
- They are aware of the need to transfer gained knowledge to future generations and form a positive attitude towards environmental protection.

We appreciate the results of this questionnaire as encouraging to start an educational project and to take concrete voluntary actions meant to increase the sanitation state of the city and the Murat River banks, to initiate an active dialogue with local authorities in order to sensitize them to environmental issues.

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