

Mihai CHIȚEA

*Institute of Agricultural Economics, Romanian Academy, Bucharest
mihai_chitea@yahoo.com*

ECOLOGICAL BEHAVIOURS AND VALUES IN THE RURAL AREA – CASE STUDY: ȚARA HAȚEGULUI – RETEZAT

ABSTRACT

The present paper attempts to assess the rural household behaviour in the 11 communes of Hațeg-Retezat area, in relation with the environment, as well as with the importance attached to its different components by the respondents. The study is based on the questionnaires applied in the rural communities from this area, in the year 2009, which were subsequently grouped into a database. The analysis was performed by using the SPSS software, which represents a quantitative analysis tool, including two dimensions, namely: objective dimensions (linked to the existence of household annexes, distance to the water source, domestic waste and manure storage) and subjective dimensions (how the respondents assessed the quality of water sources and potential risks generated by their poor quality, cleaning modality of the household annexes, importance attached to the protection of different environmental components, as well as the self-assessment of the farming impact on the environment). The main factors that influence the ecological behavior of the rural households from the investigated area are of demographic and social nature: respondent's age, educational level and occupation.

Key words: environmental behaviour, ecological values, rural area.

JEL Classification: Q53, Q56.

1. INTRODUCTION

The rural area from of the Țara Hațegului-Retezat, which represents the investigated zone in the present study, is made up of 11 communes and 3 villages belonging to the town Hațeg. Besides the demographic and social aspects, the questionnaire applied to the rural households in this area also comprised elements linked to their ecological behaviour, with reference to the agricultural and household activities that can generate negative aspects with regard to the relation with the environment.

The assessment of the ecological behaviour of the investigated rural households included two important dimensions: objective dimensions, linked to the agricultural and household activities (annexes for raising animals, distance to water sources, storage modalities of the resulting waste, animal slaughtering) and subjective dimensions, linked to the way the respondents assessed the different investigated

aspects, with implications upon health and environment, such as, for instance, the appreciation of the water sources quality and the potential dangers resulting from their inadequate quality, the importance given to the different components of the environment and the self-assessment of the farming activities impact.

The main working hypothesis of the present study is that the main factors influencing the ecological behavior of the rural households in the investigated area are the demographic and social ones: age, educational level and the respondent's occupation.

2. STATE OF KNOWLEDGE

There is a very rich literature on the ecology issue, in general, and on the rural ecology, in particular; this literature is very old, as the first concerns for the environment protection, as actions for the elimination of the disturbing elements of the natural balance date back in the ancient times. The concept was established in the 19th century, when the German biologist Ernst Haeckel, starting from the word etymology, defined the ecology as "...the study of the mutual relationships between the living organisms and their biotic and abiotic environment". His approach was preceded by the works of certain scholars who can be considered as "forerunners" in this field: Al von Humboldt (1805), Lamarque (1809), Durran de la Malle (1852), F. Unger (1836), E. Forkes (1843), J. Thurmann (1849), J.G. Cooper (1859).

The most important concept of the rural ecology is the environment, this having a multidisciplinary character and getting different connotations. Thus, Kurt Levin speaks about the "psychological space", whereas Pitirim Sorobin refers to the "socio-cultural space"; Talbot Parsons mentions the "action space", and G. Mead named it "behavioural space". In essence, the environment can be regarded as a complex aggregate of interdependent physical, chemical and biological factors, phenomena and processes, which affect the human existence and condition its evolution.

At the European Union level, the environmental programs as well as the policy for the implementation of a set of norms and regulations in the Member States, were initiated starting with the year 1973. One of the most important documents in this field was approved in 1985 by the Environmental Council of the European Community – Directive no. 85/337-E.E.Q., also known as "The Environmental Impact Assessment". The document intended to assess the impact upon the environment of certain public as well as private projects, including the targeted factors for protection: human population, flora and fauna, soil, water, air, landscape, material goods and cultural heritage, all included in the scope of the environmental policies and having in view the rational use of the natural resources for sustainable development. Since that moment, many other specific documents have been adopted in the European Union, and Romania, as a Member State, transposed them into the national legislation that regulating this field.

3. MATERIAL AND METHOD

For the investigation of the ecological behavior of the rural households from Țara Hațegului – Retezat area, the quantitative analysis method was used. This was based on the questionnaire applied to rural households, which also comprised elements referring to the relationship between these and the environment, from the perspective of the agricultural and household activities.

The questionnaires were subsequently introduced in a database and processed with the help of the SPSS software, which is a software dedicated to the quantitative analysis. The answers were analyzed both per total sample and by communes, and also in relation to other indicators, such as: age and gender of respondents/of the household head, the educational level, grouping the households according to their economic size expressed in European Size Units (ESU).

4. RESULTS AND DISCUSSIONS

4.1. Objective dimensions

Household annexes. The aspects investigated under this section refer to the existence of household annexes, their age and their distance to the water sources.

Out of the total investigated households in Țara Hațegului, 77.5% own stables for horses and cattle, 60.5% storage facilities, 12.3% sheep shed, 39.5% barn, 87.8% poultry coop and 54.3% pigsty. Other household annexes, such as the hothouses or mobile plastic hothouses are also present in this structure, but with very small values per total sample.

As regards the share of households owning annexes, by communes, there are important differences in the case of most household annexes categories. For the main categories of annexes, the situation is the following:

- Stables – for horses or cattle: lower values are found in the communes Totești (56.1%), Sântămăria – Orlea (62.3%) and General Berthelot (71.4%), while higher values in the communes Răchitova (100%), Bretea Română and Râu de Mori, both with 93.3% and Sarmizegetusa, with 92.9%;
- Storage facilities: the shares range from minimum 39.1 % in the case of the villages belonging to the town Hațeg (39.3% in the case of commune Sântămăria–Orlea) and maximum 86.7%, in the case of the commune Bretea Română;
- Sheep sheds: there are communes where the share of households that own such annexes is zero (Bretea Română and General Berthelot), going up to 25.3% in the case of the commune Pui, or 16.7% in the case of the commune Densuș.

Table 1

The share of households with annexes, by categories of annexes, in total sample

Household annexes	Share of households with annexes
Stables– for horses or cattle	77.5
Storage facilities	60.5
Sheep sheds	12.3
Barn	39.5
Hothouse	0.3
Mobile plastic hothouse	1.8
Poultry coop	87.8
Pigsty	54.3

-%-

Source: Processing of data from database – field survey Țara Hațegului, 2009.

Referring to the household annexes such as hothouse/ mobile plastic hothouse, there is a very small number of households that own such annexes: one household in the commune Totești (hothouse) and 7 households that own mobile plastic hothouses, i.e. 3 in the villages belonging to the town Hațeg, two in the commune Totești and one in each of the following communes: Sântămăria – Orlea and Râu de Mori.

Table 2

The average age of the household annexes by communes and total sample

Commune/Annexes	Stables	Storage facilities	Sheep shed	Barn	Hothouse	Mobile hothouse	Poultry coop	Pigsty
Breteia Română	46	44	...	29	...	...	30	30
General Berthelot	35	21	...	18	...	...	20	11
Sântămăria – Orlea	49	38	10	27	3	...	41	40
Baru	49	43	33	33	...	...	35	32
Sălașu de Sus	51	48	28	28	...	...	56	51
Pui	46	42	33	36	...	...	39	42
Town Hațeg	46	42	11	33	...	4	28	23
Densuș	45	48	58	35	...	...	28	36
Răchitova	36	39	30	30	...	...	38	29
Râu de Mori	47	39	41	33	...	8	43	40
Sarmizegetusa	39	36	15	29	.	.	36	35
Totești	43	36	40	24	2	5	34	35
Total sample	46	41	34	31	3	5	38	36

-years-

Note: (...) – there are no cases or valid answers for calculation.

Source: Processing of data from database – field survey Țara Hațegului, 2009.

The average age of the household annexes is rather old, per total sample, in the case of most annexes – over 30 years old. The hothouses and mobile plastic hothouses type represent an exception, whose average age is 3 and 5 years respectively. In the case of this indicator there are also important differences across the investigated communes, for example: in the case of stables, the average age ranges from minimum 35–36 years in the communes General Berthelot and

Răchitova and maximum 51 years in the commune Sălașu de Sus; in the case of sheep sheds, values much under the sample average were found in the commune Sântămăria – Orlea, the villages belonging to the town Hațeg and Sarmizegetusa – 10, 11, and 15 years old respectively, while high values were found in the communes Totești, Râu de Mori and Densuș – 40, 41, and 58 years old. Similar situations can be also noticed in the case of poultry coops and pigsties, where the values range from 20 to 43 years, in the first case (communes General Berthelot / Râu de Mori), and from 11 to 51 years in the second case (communes General Berthelot/Sălașu de Sus).

The next investigated indicator, the average age of the household annexes by the household head's gender reveals the following tendency: in most cases, the households run by women own household annexes older than those run by men.

The differences between the average age – by categories of annexes, are in general 3 years. The highest difference appears in the case of storage facilities, whose average age is 45 years, when the households are run by women and 40, when the households are run by men. The hothouses represent the only category of annexes that do not follow this trend.

If we analyze this indicator by communes, we can see that there are significant differences between them, namely: communes where the differences are very big – in favour of the households run by men (Bretea Română, Baru, Densuș), but there are also cases when, in most categories of annexes, the balance is in favour of the households run by women – Sălașu de Sus, the villages belonging to the town Hațeg.

The household head's age represents another factor which influences the age of the annexes owned by the investigated households. Thus, **the households run by persons aged under 40 own newer annexes than those run by persons in the older age categories**. This phenomenon is valid for the majority of household annexes included in this analysis. This tendency is also maintained when comparing the households managed by persons aged 41–55 and those managed by persons over 55 years of age. An exception to this case is represented by the annexes of chicken coop type and pigsties: 43 years versus 37 years – in the first case, and 38 years versus 37 years – in the second case.

As regards **the influence of the household head's educational level** upon the age of the annexes owned, we can say that there are a series of particularities, which hint to a direct proportional relation between the two elements, namely:

- The households run by persons without schooling generally own annexes with a high average age (even maximum for certain categories of annexes – sheep shed, barn, poultry coop);

- The households run by persons who graduated secondary school or high school generally own newer annexes, while those run by persons who graduated agricultural high school or a vocational school own annexes that are mostly new, for certain categories of annexes;

• The households run by persons who graduated post high-school educational units or a faculty are split into two categories: those owning annexes with high average ages (as it is the case of stables and sheep sheds) and those owning annexes of low average age (as it is the case of the storage facilities, barn, poultry coop and pigsty).

Another important indicator in this section is represented by the distance to the water source of the respective household annexes – fact which could generate negative effects upon the environment, mainly in the case of annexes for animal raising activities. Out of total investigated households that own stables for horses or cows, the largest part, i.e. 26.3% have the annexes located at 20–50 meters from the water source. These are followed by those located at 10–20 meters from the water source, with 25.5%, those at 5–10 meters, with 13.7% and those located at a distance smaller than 5 meters, with 13.3%. Together, these categories sum up 78.8% of the investigated households. The remaining percentages are divided among the households with stables placed at: 50–100 meters (7.8%), 100–500 meters (8.2%), 500 – 1000 meters (3.9%) and over 1000 meters – 1.2%.

Table 3

The share of households according to the distance of stables to the water source, by communes and total sample

Commune/Distance	<5m	5–10 m	10–20 m	20–50m	50–100m	100–500m	500–1000m	>1000m
Bretea Română	7.7	...	7.7	38.5	15.4	7.7	7.7	15.4
General Berthelot	...	20.0	20.0	40.0	...	20.0	...	...
Sântămăria – Orlea	16.7	30.0	13.3	13.3	6.7	10.0	10.0	...
Baru	17.1	17.1	31.4	20.0	...	5.7	5.7	2.9
Sălașu de Sus	22.2	5.6	22.2	27.8	...	11.1	11.1	...
Pui	6.1	16.3	26.5	18.4	18.4	12.2	2.0	...
Town Hațeg	16.7	16.7	16.7	22.2	...	27.8	...	...
Densuș	22.2	5.6	27.8	33.3	5.6	...	5.6	...
Răchitova	33.3	11.1	33.3	22.2	...	...	...	...
Râu de Mori	6.3	6.3	31.3	37.5	15.6	3.1	...	...
Sarmizegetusa	10.0	...	50.0	40.0	...	...	...	...
Totești	11.1	16.7	27.8	38.9	5.6	...	...	...
Total sample	13.3	13.7	25.5	26.3	7.8	8.2	3.9	1.2

Note: (...) – there are no cases or valid answers for the calculation.

Source: Processing of data from database – field survey Țara Hațegului, 2009.

As regards the share of households according to the distance of stables to the water source, by communes, the tendency of their location at relatively small distances is maintained, but there are communes where the share of households from the first distance category (under 5 meters, 5–10 meters) is quite small: Bretea Română, Râu de Mori, Sarmizegetusa.

Similar situations are found in the case of other household annexes, namely:

- Storage facilities: under 5 meters – 18.1% of households, 5–10 meters – 13.0%, 10–20 meters – 26.4%, 20–50 meters – 23.1%;
- Sheep shed: most households have these annexes placed at 10–20 meters (37.2%) and 20–50 meters (34.9%);
- Poultry coop: 78.1% of households have these annexes placed at a distance of up to 50 meters, with higher values in the segments 10 – 20 meters (25.4%) and 20 – 50 meters (27.7%);
- Pigsty: most households are grouped by the distance segments 10–20 meters – 28.2%, 20–50 meters – 27.1% and 5–10 meters, with 11.6%.

As regards the demographic and social factors, characteristic to the household head, which can influence the distance of different household annexes, the situation per total sample is the following:

- the household head's gender: the situation is relatively balanced in the case of stables for horses or cattle, most households in both categories belonging to the distance segments 10 – 20 meters and 20 – 50 meters; more important differences appear in the case of other categories of annexes, such as the sheep shed, as the households run by women are mostly distributed in the distance categories up to 50 meters (100%), while 17.6% of the households run by men are found in the categories over 50 meters;
- the household head's age: stables for horses or cattle – the lowest shares for the distance categories up to 20 meters are found in the age group 41–55; in the same age category we also notice the highest shares for the categories over 50 meters (35.5%) as compared to 16.6% in the case of the age group under 40 years, 18.0% respectively for the group over 55; similar situations also appear in the case of the other categories of household annexes – **the households that have the household annexes farther from the water source are generally run by persons in the age category 41 – 55 years**, followed by those over 55 and those under 40;
- the household head's educational level: stables for horses or cattle – **the households with annexes located farther from the water source are run by persons who graduated agricultural high-school, other schooling forms, high-school and secondary school**; at the same time, the households run by persons without schooling and those who graduated primary school have their annexes generally placed closer to the water source; the same holds true for the other types of household annexes.

The households with annexes of the type stables for horses or cattle located farther from the water source are those from the category rural subsistence holdings (2–8 ESU); 30.2% of them are in the distance categories of over 50 meters. In the case of the rural subsistence holdings (0–2 ESU), only 18.1% of these have their stables placed at distances higher than 50 meters. As regards the commercial rural farms (over 8 ESU), these are distributed as follows: one farm in the category 5–10 meters, one in the category 20–50 meters and one in the category 500–1000 meters. The same tendency is also noticed in the case of the other household annexes–

storage facilities, sheep shed, barn, poultry coop and pigsty– the rural semi-sub-sistence holdings tend to have their annexes farther from the water source than the other households categories.

Water sources for home use. Out of total investigated households in Țara Hațegului that gave a valid answer with regard to the water source for domestic use, 47.3% mentioned that they have access only to their own water source, 16.8% only to a common source and 35.9% both to their own source and to a common water source.

The distribution by communes reveals the existence of some significant differences from the access to water point of view. Thus, in the case of own water source, the shares range from minimum 24.6% in the commune Sătămăria – Orlea to maximum 78.0% in the commune Totești. Other communes with high shares are the following: General Berthelot – 71.4%, Sarmizegetusa – 64.3%, Răchitova – 63.6%, Densuș – 62.5%. Differences also appear in the case of the other categories of water sources, higher in the situation of the common sources and slightly smaller in the situation of the households with access both to own source and to a common source of water.

Per total sample, the households run by women tend to have rather a common water source, as well as their own and common source, while the households run by men have rather their own water source. This tendency is also maintained with regard to the distribution by communes. As regards the household heads' age, we can notice that as they grow older, there is a lower share of households with access only to their own source or to a common water source, and there is an increasing share of households having access to both types of water source.

As regards the household head's educational level, the households having a larger access to the category own and common water source are those run by persons who graduated the agricultural high-school and a post high-school schooling form or a faculty. At the same time, those having access, in general, only to own water source are the households run by persons without schooling, followed by those who graduated vocational school and high-school.

The water source used for animals. Most investigated households who answered this question mentioned that they used the well as water source for animals (69.6%), and the share of households that use water from the public water supply network, per total sample, is 15.2%. Other water sources that the rural households use are the following: spring – 5.8%, well and spring– 4.6%, well and water supply network– 2.4% and pump – 1.8%.

As regards the structure of water sources used for animals, by household head's gender and age, the differences are non-significant. If we take into consideration the household head's educational level, the differences are slightly bigger, in the case of some water sources: the persons who rather use the well as a water source for the animals are those who graduated other schooling forms and those with no schooling at all; at the same time, those who use more the drinking water supply network are those who graduated agricultural high-school, a post high-school/faculty or vocational school.

By ESU categories of holdings, those who use more other water sources than the drinking water supply network are the commercial rural farms (over 8 ESU), followed by the semi-subsistence holdings (2–8 ESU). The subsistence holdings (0–2 ESU) are those who mostly use the water supply network (16.9% of them).

Domestic waste/manure storage. Most investigated households (75.8%) mentioned that they store home garbage in garbage bins, special garbage cans or bags, which is afterwards taken by specialized firms and transported to the cesspit. The remaining households store the domestic waste either in a domestic garbage pit (at the level of the locality or of the household) – 6.1%, or use other methods /storage forms – 18.2%.

The differences between the investigated communes, from this point of view, are quite significant: there are communes where the households exclusively use the waste storage in bins, special garbage cans or bags – General Berthelot, Sarmizegetusa, communes that largely use this form – the villages belonging to the town Hațeg, Totești, Densuș, Baru, Râu de Mori, Sântămăria–Orlea (over 87% of households); there are also communes where the share of households using this form is under 50% – Bretea Română (42.9%), Pui (33.%) and Răchitova (30.0%). These localities mainly appeal to other forms domestic waste storage (70.0% of the investigated households in the commune Răchitova) or to cesspits – located at household or locality level.

Table 4

The share of households by the domestic waste storage modality, by communes and total sample

Commune/Storage modality of home garbage	Cesspit	Garbage bin / special garbage can / bags	Other situations
Bretea Română	21.4	42.9	35.7
General Berthelot	...	100	...
Sântămăria – Orlea	10.2	87.8	2.0
Baru	...	90.7	9.3
Sălașu de Sus	8.7	73.9	17.4
Pui	12.1	33.3	54.5
Town Hațeg	...	95.2	4.8
Densuș	...	91.3	8.7
Răchitova	...	30.0	70.0
Râu de Mori	2.6	89.5	7.9
Sarmizegetusa	...	100	...
Totești	5.1	94.9	...
Total sample	6.1	75.7	18.2

Note: (...) – there are no cases or valid answers for calculation.

Source: Processing of data from database – field survey Țara Hațegului, 2009.

As regards the demographic and social factors, characteristic for the household head, which could influence the modality of home garbage storage, the situation per total sample is the following:

- the household head's gender: the households run by men tend to store the garbage in garbage bins, garbage cans or bags (77.4%) as opposed to those run by women (71.1%), and use less other storage forms;

- the household head's age: the households that mostly use garbage bins, special garbage cans or bags are those run by persons aged under 40 years (85.7% of these); the households run by persons from older age categories also use this form, but they also use other storage methods – 27.8% for the group 41–45 years and 24.6% for the group over 55;

- the educational level: the households that mostly use garbage bins, special garbage cans or bags are run by persons who graduated high-school, agricultural high-school, vocational school or post high-school/faculty.

The structure of households by the value of ESU reveals the existence of some relatively small differences between the households categories: most households from the three categories (subsistence, semi-subsistence and commercial) use garbage bins, special garbage cans or bags for the storage of home garbage; the differences appear in the case of the first two categories, who also use some other storage forms that are used by 17.9% of the subsistence households and 23.4% of the semi-subsistence households.

As regards manure storage on the investigated households, resulting from animal raising activities, out of total households included in this category, 40.8% declared that manure was stored on earth platforms, 32.2% used other forms and 16.7% used their own manure earth pit. The households that store the manure on concrete platforms or in own concrete pits represent only 10.2% of those involved in such activities.

The differences between the investigated communes are also important in this case, mainly in the category “concrete platforms”. Thus, we find communes where the share of households using this method is quite significant – Sarmizegetusa (57.1%), Sălașu de Sus (23.1%), Sântămăria – Orlea (12.5 %), but also communes where no investigated household mentioned that it used this method– Bretea Română, General Berthelot, the villages belonging to the town Hațeg, Densuș, Răchitova or Râu de Mori. However, in the case of these last three communes, we can notice the highest shares of households using their own concrete pits for manure storage (from 8.6% to 11.1% of households).

Having in view the small number of households that use other manure storage forms, which can provide higher protection, such as concrete platforms and concrete pits, the structures based on **the gender, age or education of the household head** present small differences between categories, which let us draw the following conclusions: a slightly higher share of households run by men opt for such storage forms compared to those run by women; from the age point of view, the households using more these manure storage forms are those run by persons under 40 years of age (in the case of the concrete pits) and those aged 41–55 years (in the case of concrete platforms); as regards the educational level, the persons

without schooling, those who graduated high-school and a post high-school education unit/faculty rather use concrete pits, while the persons who graduated other schooling forms, high-school and secondary school rather use concrete platforms.

From the point of view of the household categories, **by ESU**, the households using storage methods of concrete pit/ platform type are the semi-subsistence (2–8 ESU) and subsistence holdings (0–2 ESU), while the rural commercial farms (over 8 ESU) use earth pits, as manure storage method.

4.2. Subjective dimensions

The water source quality. Most respondents who answered this question appreciated the water source quality for home use as being good – both their own water source (90.5% of respondents) and the common source (81.2% of respondents). In the case of the common water source, 18.8% of respondents considered that its quality was bad.

As regards the demographic and social factors, characteristic for the **respondent**, which can influence the assessment of the water source quality, the situation per total is the following:

- the respondent's gender: in the case of own water source, we can notice a **higher share of male respondents who considered that the water quality was bad** (11.4% of them), compared to the women respondents (7.8%); the situation is reversed in the case of the common water source: 21.7% of the women respondents considered that the water quality was bad, as opposed to 15.% in the case of men respondents;

- the respondent's age: **the most unsatisfied with the water source quality are the respondents aged over 55 years**: 10.3% – in the case of own water source and 22.0% – in the case of the common water source considered that the water quality was bad; the bad quality of the common water source was also mentioned by 17.1% of the respondents aged under 40 years;

- the educational level: in the case of own water source, the most unsatisfied are the respondents without schooling (20.0% of them), those who graduated primary school (18.2%) and secondary school (11.2%); the bad quality of the common water source is mainly mentioned by the respondents who graduated a post high-school education unit/faculty (33.3% of them), by those with no schooling (25.0%), who graduated high-school (24.1%) and other schooling forms (23.1%).

As regards the structure of answers, according to the household categories, **by the value of ESU**, those who largely mention the bad quality of own water source are the respondents from the commercial farms (over 8 ESU) – 33.3% of them, and those from the subsistence households (0–2 ESU) – 10.4%. At the same time, 21.7% of the respondents from the subsistence households, and 8.8% from the semi-subsistence households considered that the common water source quality was bad.

Table 5
Assessment of water source quality for home use, by communes and total sample

Commune/Water source quality assessment	Own water source quality		Common water source quality	
	Good	Bad	Good	Bad
Bretea Română	100	...	88.9	11.1
General Berthelot	85.7	14.3	100	...
Sântămăria – Orlea	78.8	21.2	69.6	30.4
Baru	86.0	14.0	73.7	26.3
Sălașu de Sus	92.0	8.0	72.7	27.3
Pui	90.2	9.8	82.9	17.1
Town Hațeg	100	...	75.0	25.0
Densuș	91.3	8.7	100	...
Răchitova	90.9	9.1	100	...
Râu de Mori	93.8	6.3	96.6	3.4
Sarmizegetusa	78.6	21.4	80.0	20.0
Totești	97.6	2.4	100	...
Total sample	90.5	9.5	81.2	18.8

Note: (...) – there are no cases or valid answers for calculation.

Source: Processing of data from database – field survey Țara Hațegului, 2009.

As regards the problems that could appear as a result of using some **own water sources of bad quality**, most respondents (52.0%) are afraid that this could affect their personal health and the health of animals, i.e. 44.0% personal health and 4.0% personal health, animal health, and grain quality. As regards **the common water source** of bad quality, most respondents (57.7%) are afraid for their personal health and animal health, 38.5% for the personal health and 3.8% for the personal health, animal health and grain quality.

As regards the structure of the respondents' answers, **by gender**, the differences between categories are small in the case of own water source, hinting to the personal health and the animal health in the first place, personal health and on the last place, in the case of men, to personal health, animal health and grain quality.

However, significant differences between the categories of respondents appear in the case of the common water source. Thus, **the women respondents are much more strictly interested in their personal health** (46.7% of them), compared to men respondents (27.3%), while the latter are more interested in their personal health and in the animal health (72.7%), compared to 46.7% in the case of women respondents.

The respondents' age also represent a factor that influences their answers concerning the problems that may appear from using some bad quality water sources. Those who are generally interested in their personal health – in the case of own water sources, are the **respondents aged under 40 years** (80.0% of them), while the respondents aged 41–55 years and those over 55 of age are firstly concerned with “personal health and animal health” – 60.0% in both cases. The only who are interested in the “personal health, animal health and grain quality” are, in this case, the respondents in the category 41–55 years old (20.0%).

In the case of the **common water source**, the majority of answers, by age categories, refer to “personal health and animal health”: 100% in the case of those under 40 years of age, 66.7% of those aged 41–55 years and 52.4% of those over 55 years, while the remaining answers generally refer to “personal health”.

As regards the structure of respondents’ answers by **educational level**, per total sample, the situation is the following:

- in the case of own water source: the respondents who are interested only in personal health are those with no schooling and those who graduated the vocational school / faculty – 100% of these; at the same time, those who are firstly interested in “personal health and animal health” are the respondents who graduated primary school – 80.0% of these, vocational school – 60.0% and high-school – 50.0%;

- in the case of the common water source: the respondents who are firstly concerned with their personal health are those with no schooling – 100% of these, and those who graduated the secondary school – 66.7%; the respondents who are firstly concerned with “personal health and animal health” are those who graduated a post high-school education unit/faculty – 100% of them, primary school – 87.5% and high-school – 66.7%. The only respondents who are interested, besides their personal health and animal health, also in the grain quality, are those who graduated a vocational school.

As regards the structure of answers by household categories, according to their economic size (in ESU), **in the case of own water source**, the respondents from the commercial farms (0–8 ESU) are concerned only with “personal health, animal health and grain quality”, and the respondents from the subsistence households (0–2 ESU) and semi-subsistence households (2–8 ESU) are almost equally concerned with “personal health” and “personal and animal health”. In the case of the **common water source**, the only category where valid answers existed was the category of subsistence households – 60.0% of the respondents from this category cared about “personal health and animal health”, 36.0% about “personal health” and the remaining 4.0% were concerned with “personal health, animal health and grain quality”.

The assessment of activities carried out by the rural households. Most respondents appreciated the activities on the rural households (home activities, animal raising, and crop production) as being non-polluting.

Table 6
Assessment of activities carried out on the rural households, per total sample

Activity assessment	Home activities		Animal raising		Crop production	
	Non polluting	Polluting	Non polluting	Polluting	Non polluting	Polluting
Total sample	80.9	19.1	84.7	15.3	83.5	16.5

Source: Processing of data from database – field survey, Țara Hațegului, 2009.

However, in the investigated communes, there are still many respondents who considered that these are polluting activities: **home activities** – Sălașu de Sus (40.0%), Baru (25.9%), Sarmizegetusa and Pui – 21.4%; **animal raising** – Răchitova (28.6%), Sălașu de Sus (24.0%), Râu de Mori (19.5%); **crop production** – Sălașu de Sus (34.6%), Totești (22.0%), Baru (19.6%).

As regards the demographic and social factors characteristic to the respondent, the situation is the following:

- Gender: the differences are relatively small, but, in general, the male respondents considered to a greater extent that the home activities and crop production are more polluting (21.1% M/17.2% F, 17.6% M/15.3%F respectively);
- Age: the highest shares, as regards the polluting character of the home activities and animal raising – the group 41–55 years old (28.2% / 16.7%); in the case of crop production – those over 55 (17.6%);
- Educational level: home activities – other schooling forms (31.8%), vocational school (23.4%), post high-school /faculty (21.4%), agricultural high-school (20.0%); animal raising – agricultural high-school (40.0%), post high-school/faculty (20.7%); crop production – agricultural high-school (40.0%), post high-school/faculty (24.1%).

The last investigated indicator in this section refers to the assessment by respondents of the importance of different local and national players' involvement in environment protection activities.

The highest average score per total sample goes to the category “All people in the commune”, followed by the “Town Hall” and “Somebody else”. In the investigated communes, for the category “All people in the commune” the maximum score (5.0) was given by the respondents in the commune Sarmizegetusa, and the smallest (4.36) by those in the commune Bretea Română; for the “Town Hall”, the highest score (4.82) – commune Densuș, and the lowest (4.15) – commune Bretea Română (in the case of this commune, the highest score was given to the category “the Government”).

Table 7

Average score attached to “How much do you consider that they should get involved in environment protection...”, per total sample

-average score attached -

	Town Hall	All people in the commune	Prefecture	The Government	Somebody else
Total sample	4.59	4.73	4.17	4.31	4.55

Note: 1– minimum value, 5 – maximum value.

Source: Processing of data from database– field survey Țara Hațegului, 2009.

Depending on the demographic and social factors characteristic to the respondent, the situation is the following:

- Gender: the women respondents gave higher average scores, in most categories; the only exception can be noticed in the category “the Government” where the average score was lower compared to that of male respondents;

- Age: for the first three categories – the highest scores – the group over 55 years; the group under 40 years – the lowest score for “All people in the commune”, “Prefecture” and “Somebody else”;
- Educational level: “All people in the commune” – maximum score (5) – the respondents with no schooling, 4.80 – agricultural high-school, 4.77 – high-school; in the case of “Town Hall” – the highest score (4.71) – respondents with no schooling, and the lowest (4.40) – respondents with agricultural high-school; for the category “Somebody else” – maximum score – respondents with no schooling and post high-school / faculty.

5. CONCLUSIONS

The analysis of the rural communities from Țara Hațegului – Retezat area reveals the existence of a moderate ecological behavior at rural household level, which is proved by:

- The high share of the households which have the house annexes (stables for horses or cattle) located at a small distance to the water source;
- The small share of households that use manure storage providing a high protection level – concrete platforms and pits;
- Low awareness of potential dangers generated by the human activities (home, animal raising, crop production activities) for the environment.

However, there are still favorable elements at the rural household level in the investigated area, which could lead to the improvement of the current situation in time:

- High share of households that use sustainable methods of domestic waste storage (dustbins, special garbage cans);
- A high awareness level with regard to the main role that all the members of the local community should play, in the environment protection, before other institutions or organizations.

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