



Romanian Academy  
RESEARCH INSTITUTE FOR QUALITY OF LIFE

## **The monitoring of Social Effects of the Agricultural Pollution Control Project**

*A report for Ministry for Environment and Water Management*

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This report summarizes the results of the community studies carried out within the project “Monitoring of the social effect of the agricultural Pollution Control Project”.

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## EXECUTIVE SUMMARY

The objective of the project is to significantly increase the use of environmentally friendly agricultural practices among eligible farmers in the target project areas. The ultimate goal is to reduce the discharge of nutrients and other agricultural pollutants into the Danube River and Black Sea through integrated land and water management. While the farmers have received benefits from the improved practices and investments, most of the benefits have come from improved environmental quality of Romanian surface and groundwater and the Black Sea.

In support of this objective, the project assists the Government of Romania to: (i) promote the adaptation of environment – friendly agricultural practices by farmers associations, family farms and individual farmers in Călărași County; (ii) promote ecologically sustainable land use and management in the Boianu- Sicleanu Polder, and restoration of the neighboring Călărași River Polder to act as a filter and reduce nutrient discharge to the Danube; (iii) strengthen national policy and regulatory capacity and (iv) promote public awareness and mechanisms for replicability. The project envisaged as a demonstration activity in the Călărași County in the Southern part of Romania, along the lower Danube, may provide replicable lessons for introduction of similar practices in other districts of Romania as well as other riparian countries.

The project has identified the southern part of Călărași County as project site. Seven communes (Alexandru Odobescu, Ciocănești, Cuza Vodă, Grădiștea, Independența, Vlcele and Vlad Țepeș), comprising about 90,000 ha with 70,000 ha of arable land, have been included in the project. The total rural population is 26,700 in 10,540 households and in 21 villages.

The present social aims to evaluate the effect of the project's implementation from the social point of view, in the seven communes of Călărași County. The assessment has to assess the impact of the project over the target population in Călărași County and to evaluate the usage of environmental-friendly agricultural practices and of the nutrient management plans, both at the level of the agricultural associations in the areas and at the individual household level. The present assessment has to evaluate the impact of the project taking into account the results of the Social Assessment carried out in 2000, before the implementation of the project, which should be considered as a benchmark.

### Specific objectives of the assessment:

- to provide data about the area under nutrient management systems including crop rotation, crop nutrient management with soil testing and use of organic manure;
- to provide data about the area under environment-friendly agricultural practices;
- to provide data about the farmers adopting one or more environment- friendly practices in the areas where demonstrated.

The methodology of research combines qualitative and quantitative approach. A series 7 of community studies have been carried out in all communes included in the project. The aim of these studies was to draw a community's profile and to identify the use of environmental friendly agricultural practices, the garbage's and manure's management in each commune included in the

project and the effects of the new practices on the public health. There have been carried out 9 interviews with local representatives (mayors, vice-mayors and secretary of the Townhall), 9 interviews with medical stuff (doctors and nurses) and 7 interviews with agricultural engineers. In addition, a series of in- depth interviews with manager of the agricultural companies in the area were carried out in order to evaluate the implementation of environmental friendly agricultural practices and to identify the problems raised during the implementation of such practices. There have been interviewed 25 managers of the agricultural companies.

The quantitative approaches aimed to identify the total surfaces exploited using environmental friendly agricultural practices, in agricultural companies and in individual households, and to asses the correct garbage management at the households' level. A sample of 489 households was used in order to carry out the survey research, while for the agricultural companies have been applied 67 questionnaire, being included all the identified agricultural companies in the area.

There are high differences between agricultural companies and households in the project's area with the respect to the utilization of environmental friendly agricultural practices. The implementation of these practices at the companies' levels more developed, than at the households' level. At both levels crop rotation and utilization of selected seeds are more used then the other ecological practices. The utilization of compost as fertilizer and of the natural windbreaks has increased at both levels since 2000, due to the development of the project in the area. At the companies' level the utilization of ecological practices has increased in the last 4 years. Data indicates an improvement on almost all the practices. At the individual level the data indicates an improvement only with respect to using compost as a fertilizer.

The general attitudes of the managers of the companies in the area are a favorable one, people being willing to introduce the environmental friendly practices, but stressing some difficulties encountered in the process of implementation. Difficulties mentioned by the managers of the companies and by the local representatives are: lack of information and ok know-how about bio and eco agriculture, higher cost of productions, lack of a market for selling bio or eco products.

From technical and economic reasons the individual farmers, with small exploitations, do not represent a target group for all the environmental friendly practices. In their case an information campaign should be focused more on how to avoid the pollution and how to properly use the fertilizers and pesticides on small surfaces. The utilization of ecological practices is not the same to all the households in the area. The households with a bigger surface, with higher income, which intend to extend their agricultural activity in the future, pay more attention to environmental friendly agricultural practices. Moreover, the more educated individuals, who are concerned about the pollution in their village and who consider the agricultural engineer and the books to be the best sources of information are more inclined to use ecological practices.

The general attitude towards individual platforms is a positive one, people in the area considering them useful in a great extent. However, the inhabitants are not willing to pay for building one. Generally speaking the garbage's and manure management is a correct one, especially in the households with individual platform. More then half of the population in the area use to separate the garbage and use to properly evacuate the garbage to the village platforms. The management of organic garbage and of manure is a correct one, especially in the households with garbage platform. The management of non-organic garbage is not so correct, even in the households

with platform and rubbish cart. The local authorities have signaled the same thing and explaining the improper management by the conservative peoples' mentality.

Comparing to year 2000 (baseline study) the risk of water's pollution within household has decreases because the distances between the source of water and the sources of pollution (latrine and place to store garbage and manure) the have increased. However, the risk of water's pollution is still present due to the fact that all the households in the area have latrines build without concrete walls. However, different from the baseline study people change the criteria to choose a place for building it and understood that it represents a source of water's pollution. Even there are some cases of diseases generated by the polluted water, the medical stuff and the local representative consider that the situation get improved in the last years.

People in the survey are informed about the existence of the project, the majority of the people declared that they have heard of the existence of the project. The opinions of people interviewed converge to the idea that the project was successfully implemented so far. Some problems were mentioned regarding the structure of the population in the area as most population in some villages is aged or the "old mentalities" that make people being more resistant to change.

The vast majority of our subjects considered that the project has had an important and positive impact on individuals' lives as well as on community in itself. First, people have been through a social learning process that introduced them to a better way of carrying out things. In addition, the project made a contribution to the strengthening of the relationship between local authorities and people in the community, to an increase in trust among citizens and authorities and even helped in addressing other issues that are important to the people I the area.

Based on the finding of the fieldwork research, one can formulate some **recommendations** for the improvement of the project implementation:

- The component related to the implementation of the environmental friendly agricultural practices should be focused more on the agricultural companies in the area, because they represent the main actors in the agricultural activities. An information campaign addressed to the agricultural companies in the area will be helpful in assisting companies to change their activity. The campaign should be focused on: information about environmental friendly agricultural practices, about how to obtain certificate of bi- producers and about the market for such products.

- The information campaign should be associated with some measures of financial support for those producers who begin to produce according to bio- or eco- standards. The financial support is needed in order to assist them for changing the technology.

- At the individual households level an information campaign should be designed in order to inform the village's people about pollution produced by some agricultural practices. This campaign should emphasize the correct management of chemical nutrients and of pesticides in order to avoid pollution in the area.

- An information campaign address to individual household should be designed in order to stress the role of separation of organic and non-organic garbage for avoiding pollution and for recycling the garbage. A special attention should be paid to the management of non - organic garbage which is not a correct one in the majority of the households in the area.

- A support for the establishment of a public service for garbage evacuation is welcomed for the area. The establishment of such service will reduce the incorrect evacuation of garbage and

will make people to separate the garbage in organic and non-organic.

- The latrines still represent a source of water's pollution, but the lack of information and of financial resources do not allow people to do some changes. An information campaign should be initiated in order to train people how to build an unpolluted latrine. Moreover, the assistance provided to the people in the area in building latrines, in terms of know-how and of financial support, will be helpful in reducing water pollution.

- A more comprehensive approach should be used in order to address the health problems and further change things in the area: on the one hand, building infrastructure on several dimensions: running water, a sewing system, continuing the building of ecological platforms for more households and a collecting garbage system at local level. On the other hand there is the need for more educating the people about the quality of drinking water, and of water in the lake and canals, educating young mothers about the health risks for their new born.

## **I. THE RESEARCH METHODOLOGY**

The research's methodology has been drawing up taking into account the principle of comparability. The research's instruments include the indicators mentioned by the monitoring plan elaborated in 2000, at the end of baseline study. Two research methods have been employed: the study of community and the quantitative research based on questionnaire. The option for combining the quantitative and qualitative methods is justified by the need to monitor to project's effects by comparing them with the results of baseline study at the individual's level, at the agricultural companies' level and at the community's level.

Therefore, the surveys provide data about the project implementation at the level of agricultural companies and at the level of individual households. The studies of community allow a more detailed knowledge about project's effect at the community's level. Moreover, the qualitative approach offers comprehensive information about the practices used by the agricultural companies and about the difficulties faced by them in the implementation of environmental friendly agricultural practices.

### **I.1. The community's studies**

There have been carried out 7 studies, in each commune included in the project. The goal of the community's studies is to draw a general image of the commune and to monitor the partial effect of the project's implementation in each of seven communes. Two types of instruments have been employed in order to collect the data at the commune level: a small questionnaire designed to provide information about the socio-demographic and economic profile and the semi-structured interview.

#### The questionnaire for community profile

The dimensions comprised in this instrument are:

- socio-demographic data:
  - o population: number, age distribution, sex distribution, fertility rate, mortality rate, infant mortality rate, nuptiality
- infrastructure: total surface of land, agricultural land, buildings, agricultural equipment
- economic activities in commune:
  - o agricultural activities and agricultural companies: types of agricultural exploitations, livestock, agricultural extension services available in the area
  - o non-agricultural economic activities and companies
- data about public health: specific diseases, number of patients, pollution effect

**Sources of data:** local statistics and documents, local authorities, medical statistics, census

### Semi-structured interview

The semi-structured interviews have been carried out to the managers of the agricultural companies as requested in the application form. For a more reliable evaluation of the project's impact there have been carried out some in-depth interviews with the local authorities, with the medical staff and with the agricultural engineer of the townhall. Therefore, in each commune have been interviewed: one representative of the local authorities (the mayor, the vice-mayor or the secretary of the townhall), the agricultural engineer of the townhall, the doctor (and in some cases the nurse gave information too) and 3 or 4 managers of the agricultural companies. In case of Independența only one interview with a manager of an agricultural company was done, because in the commune there is only one such companies. The criteria for selecting the companies for interviewing the managers was the total dimension of the agricultural land exploited by the companies, being selected the managers of the biggest exploitation in the commune. There have been carried out 50 interviews (25 with the managers of the agricultural companies, 9 with the local representatives, 9 with the medical staff and 7 with the agricultural engineers).

A list of interviewed persons is presented in the Annex 3. The interview guides for each categories of people is included in the Annex 2. An extensive presentation of the results of the qualitative research is comprised in the Report 2, dedicated to the communities' profile.

#### Interview's guide for the managers of the agricultural companies

General data about the company

Project estimated impact at the community level and at the company level.

Project implementation and difficulties encountered during the implementation

Main actors involved in the project

#### Interview's guide for the local representatives

Socio-demographic profile of the commune

Economic profile of the commune

Infrastructure available

History of the project's implementation

Difficulties encounter during the project's implementation

#### Interview's guide for the medical stuff

Evaluation of the public health of the commune

Evaluation of the project's impact

## **I.2. The quantitive surveys**

Two type of survey have been carried out during the fieldwork research: one addressed to the agricultural companies and the other to the individual households. The first one aims to find out the total surface exploited using environmental friendly agricultural practices at the companies' level, while the second aims the same goals for the individual households, trying to estimate in addition the garbage's and manure's management in the households in the area.

#### Survey addressed to the agricultural companies

The aim of this survey has been to identify the total surface exploited using environmental friendly agricultural practices in the area, by the agricultural companies. The questionnaire refers to the practices used by the companies in 2000 and 2004, asking for the total surface exploited by each ecological practice in each association in 2004. The questionnaire addressed to the agricultural companies is attached in the Annex 2. There have been administered 67 such questionnaires to all the agricultural companies identified in the 7 communes.

**Table I-1 Number of questionnaire for agricultural companies by commune**

	Number of questionnaires
Cuza Voda	13
Independenta	1
Odobescu	5
Cicanesti	16
Gradistea	9
Vlad Tepes	13
Vâlcele	10

#### Survey addressed to the individual households

The main goal of the survey is to collect data about the utilization of the environmental friendly agricultural practices at the households' level, about the garbage and manure management and about the perceived impact of the project in the area. The questionnaire addressed to the households is attached in the Annex 2. The dimensions investigated by the questionnaire are:

- agricultural activities and agricultural potential of the household
- use of environmental friendly agricultural practices
- garbage and manure management
- subjective evaluation of the impact of the project
- socio-demographical data

#### Sampling methodology

The sample is random probabilistic and stratified one, with the selection in the last stratum. Two criteria of stratification have been employed:

1. the locality
2. the households position towards the project (household included in the project and non-included in the project)

The total volume of sample was of 489 households. The household was the sampling unit. This volume of sample assures an error of 4% with a level of confidence of 95%. The sample includes households from all 21 villages in the area. The selection of household included in the project was done on the list of all the households in the project. The selection of households not included in the project was done using the Agricultural Registry.

**Table I-2 Structure of sample by commune and by households' position by the project**

	Households included in the project	Households not in project	Total sample
Alexandru Odobescu	18	48	66
Ciocanesti	12	68	80
Cuza Voda	14	58	72
Gradistea	42	54	96
Independenta	10	56	66
Valcelele	12	45	57
Vlad Țepes	10	42	52
Total	489	371	118

A comparison with the sample of baseline study should be draw. The sample used in baseline study was convenience one, not a representative one. The volume was of 374 having an error of 10%. In addition, the sampling unit was the individual not the household, different from the present sample. Therefore, all the comparisons with 2000 data should be carefully checked and considered with a high precaution.

## **II. ENVIRONMENTAL FRIENDLY AGRICULTURAL PRACTICES**

The aims of the investigation were to identify the total surface exploited using environmental friendly agricultural practices and to find out the utilization of such practices in the project area. In addition, the analysis tried to discover the differences among communes involved in the project with the respect to the investigate topic and the profile of the individual households which are using such practices. The analysis was carried out at two levels: at the individual households' level and at the agricultural enterprises' level. The analysis includes qualitative and quantitative information and tries to combine both types of analysis for the agricultural companies.

The present chapter is structured in three parts: the first one deals with utilization of environmental friendly agricultural practices in agricultural companies, the seconds refers to the use of these practices at the individual households' level and the last parts tries to draw some conclusions.

### **II.1. Agricultural companies**

The agricultural companies are the main actor in the agricultural activities in the area. The individual households are exploiting a small amount of the total available agriculture land. In this context a special attention should be paid to the companies, considered the most important agent in the project's implementation.

The present analysis will concentrate on the total surface exploited in the area using environmental friendly agricultural practices, on the number of such practices used by the companies, trying in the same time to identify possible differences among the commune in the area. A special attention will be paid to the problems encountered by the companies in implementing such practices.

Looking to the total surface exploited using environmental friendly agricultural practices one can says that the utilization of selected seeds and the crop rotation are the most popular practices among those includes in the list (see Table II-1). According to these data, at the both levels, households and companies, selected seed are used on the biggest surface and the next practice from the extension point of view is crop rotation. At the end of this top are located the utilization of compost, of the organic insect killer and the natural windbreaks. This fact is not a surprising one in the context of higher cost for natural windbreaks and of the lower availability of the compost and of the organic insect killer.

Looking to the percent of the household and of the companies which use one of the environmental friendly agricultural practices, one can point out that the crop rotation and the utilization of selected seeds are the most employed by the companies and by the household in the area, followed by the utilization of the chemical fertilizer and of the pesticides under the control of a specialist. Again the utilization of the compost, of the organic insect killers and of the windbreaks is not so popular.

**Table II-1 Total surface cultivated using environmental friendly agricultural practices (2004)**

(ha)	Households	Associations	Total
Did you practice the crop rotation periodically changing the cereals with vegetables (beans, soy, pease) or with technical crop on the same plot of land	392	23111	23503
Did you use chemical fertilizers asking to a specialist about the quantity of the fertilizers	244	15308	15552
Did you use organic fertilizers (compost)	158	4990	5148
Did you use organic insect killer against crop diseases	106	595	701
Did you use pesticides against crop diseases asking to a specialist about the quantity and the quality of the pesticides	276	19137	19413
Did you use selected seeds	437	28416	28853
Did you use soil testing	183	9181	9364
Did you use natural windbreaks	12	407	419

On the other hand, if one compares the percent of utilization the environmental friendly agricultural practices in 2000 and 2004 at the companies' level, can observe an increasing in using these practices between 2000 and 2004. The most significant improvement is related with the utilization of compost, used by 16% of agricultural companies in the area in 2000 and by 24% in 2004 (see Table II-2). A significant improvement can be observed in the case of using chemical fertilizers asking to the specialist too, from 83 in 2000 to 88 in 2004. Generally speaking the agricultural companies in the area have changed a little bit their practices and have adopted environmentally friendly practices.

**Table II-2 Percentage of associations using environmental friendly agricultural practices in 2000 and 2004**

%	2000	2004
Did you practice the crop rotation periodically changing the cereals with vegetables (beans, soy, pease) or with technical crop on the same plot of land	98	100
Did you use chemical fertilizers asking to a specialist about the quantity of the fertilizers	83	88
Did you use organic fertilizers (compost)	16	24
Did you use organic insect killer against crop diseases	8	9
Did you use pesticides against crop diseases asking to a specialist about the quantity and the quality of the pesticides	83	85
Did you use selected seeds	98	99
Did you use soil testing	27	24
Did you use natural windbreaks	15	19

Therefore, even if the surface exploited using compost as fertilizers and protected by natural windbreaks is the lowest compared to the other practices promoted by the project, the percent of companies using them has strongly increased in the last 4 years. This fact is the direct result of the project's implementation. As a result of the project implementation the compost is now available in

the area and all seven communes included in the project have initiated action of planting natural windbreaks. All the local representatives in the area have mentioned during the in-depth interviews that they have initiated action of planting such windbreaks.

Beside the quantitative data, the in-depth interviews, with managers of the agricultural companies in the area, indicate that most of these companies are using environmental friendly practices. Only 2 of 25 managers interviewed during the fieldwork said they are not using such practices. Generally speaking the agricultural companies in the area try to respects some rule related to the environment protection. Crop rotation is used on large scale, the companies alternating cereals with sun flower and peas. Selected seeds are used on the large scale too, most of the companies buying them from the authorized companies. In addition, excepting two companies, all the enterprises included in the investigation have done the soil testing, not yearly but from time to time.

Most of the companies included in the qualitative investigation declare they are using chemical fertilizers and pesticides under a strict control, buying them from the authorized companies and administrating them using specials machines, just on the proper weather (not windy, without rain or snow). Some of the companies have specials spaces for stock these chemicals (fertilizers and pesticides). The others do not stock the chemicals, they use to buy them and to administrate them immediately, in order to avoid the contamination. Moreover, the manager of this companies have mentioned that they avoid to use extra fertilizers and pesticides if it not need in order to avoid the pollution and the waste, because these chemicals are quite expensive.

*We avoid using to much chemical fertilizer because: on the first hand you are destroying the soil's potential and secondly you don't obtain the predicted production. So, the expenses are higher and you do anything! You have destroyed the land without the expected result! (President - agricultural company, Vâlcele)*

The manager of the agricultural associations stresses that the compost's use is better then that of chemical fertilizers from many reasons: the compost does not pollutes the environment, is less expensive and is available in the area, because of the garbage platforms built in the area.

*[The compost] is benefic for our company and for the commune because in the near future we will use organic fertilizer instead of chemical fertilizer, which is cheaper. The chemical fertilizer is pretty expensive, costing about 2.5 millions lei for 1 hectare. We consider that using the organic fertilizer we will make an ecological agriculture. (President – agricultural company, Grădiștea)*

Summarizing, one can say that people involved in the agricultural companies in the area become sensitive to the pollution issue and are trying to implement environmental friendly agricultural practices in their activity. It is hard to say that they practice bio- or eco- agriculture but they are conscious of the implication of their activity for the environment and they understand what does it means an environmental friendly agriculture and which are theirs benefits and costs.

Generally speaking the attitudes towards ecological agricultural practices is a favorable one. The managers of the agricultural companies and the local representatives indicate a strong support for these kinds of practices. Most of the interviewed people consider that the ecological agriculture represents the future: *'we should learn more about [ecological agriculture]... [...] but this is the future'* (President - agricultural company, Vâlcele).

Although all the mangers of the companies and most of the local representatives indicates

the difficulties involved by this kind of agriculture. One of them is the lack of knowledge and of information about how to do ecological or biological agriculture. People in the area indicate their need to learn more about and to be more informed.

*'...we should be prepared... we need more information and more theory and more practice... we are not at all familiar with this problem' (President - agricultural company, Vâlcele)*

Beside the lack of knowledge, the managers of the agricultural companies have mentioned a series of economic problems related to the implementation of the environmentally friendly practices like: high cost of production and lack of a market for bio and eco- products. The managers pointed out that the cost of production is too high and the prices for selling are quite low, therefore they cannot recover the investment. They consider that some subventions for the eco and bio producers are well-come in order to stimulate the environmental friendly agriculture.

*[The ecological agriculture] is more expensive and the products cannot be sold on the market. The products are expensive. (President agricultural company, Ciocănești)*

*Yes, it has future, but today the economy is very tough, we cannot afford to wait to do an ecological agriculture, because we don't have a market, it didn't generate an immediate income. Nobody give us money; let's say an allowance for this. (President – agricultural company, Vâlcele)*

*This type of agriculture is very well come and it is a good thing to be extended but it should be subsidized. (President – agricultural company, Vâlcele)*

Another problem mention by the managers is the lack of market for the bio and eco products. Even if they produce using some standards they consider that they do not have the opportunity to sell their production, because there is no such local market and they should go to Bucharest or to export their products but they do not how to do this. In addition, this involves extra cost and they are not able to cover them.

*It is true that the ecological products are more expensive in every country, but it is difficult to sell them. You cannot sell them in Călărași, you should go to Bucharest! You should have certificate of bio-producer, you should be monitorized! (Vice-mayor)*

*We do not have an organized market for such products (President, agricultural company, Cuza Vodă)*

*I believe that there is no market. In this context is very difficult to do ecological agriculture." (President – agricultural company, Independența)*

The data indicates that the general attitude is a positive one, but people evaluate the gains and the costs and consider that there are some practical problems. In the case of the environmental friendly agriculture people accept the new ideas, but consider that the costs are too high and they do not have the opportunity to sell such products.

## **II.2. Individual households**

The data regarding percentage of households using environmental friendly practices are not so optimistic. According to the Table II-3 there are no statistically significant differences between

2000 and 2004<sup>1</sup> if we consider the answers to the questionnaire applied in 2005. If we are looking to the data collected in 2000 we can detect two statistically significant differences one with the respect of using compost and the other related to the windbreaks. It seems that using of compost and of natural windbreaks are the parts in which the project has had the strongest impact, both at the companies and at the households levels. Unfortunately, there are no comparable data for the baseline study with the respect of these practices, consequently we cannot make other comparison and to measure the direct impact.

The baseline study has included a question about crop rotation, but the formulation refers to the general crop rotation, not to a special mode to do crop rotation, like in present questionnaire. In this context it is not possible to compare the data, as along as they refer to different things.

**Table II-3 Percentage of individual household using environmental friendly agricultural practices in 2000 and 2004**

	%	2000	2004	2000(baseline study)
Did you practice the crop rotation periodically changing the cereals with vegetables (beans, soy, pease) or with technical crop on the same plot of land		42	40	
Did you use chemical fertilizers asking to a specialist about the quantity of the fertilizers		21	20	20
Did you use organic fertilizers (compost)		<b>46</b>	<b>43*</b>	<b>30*</b>
Did you use organic insect killer against crop diseases		12	10	
Did you use pesticides against crop diseases asking to a specialist about the quantity and the quality of the pesticides		20	20	
Did you use selected seeds		43	42	
Did you use soil testing		4	4	
Did you use natural windbreaks			<b>4*</b>	<b>3*</b>

Difference statistically significant for  $p < 0.05$ , tested using  $\chi^2$  Test

The lack of differences between 2000 and 2004 at the individual level is not surprising. People tend to respond to the question about how they have done in 2000 with the same answer as for 2004. In other words, it is quite difficult to remember how they have done 4 years ago, therefore the most of respondents use the same answer like in 2004. This no means that the things did not change in 4 years, but the people do not make the difference between 2000 and 2004.

Another indicator used in the case of individual household is the number of environmental friendly agricultural practices used by the household. This indicator suggests that there is no change between 2000 and 2004, the mean number of such practices used by the household being 1.4 in 2000 and 1.5 in 2004<sup>2</sup>. Again, it seems that the things did not change in the last 4 years.

However, the management of pesticides used in individual households is quite correct. Half of the households included in the sample use to ask to a specialized company for dusting the land with pesticides and almost all (92%) of those who dust by themselves with pesticides use to buy these from authorized companies. Compared to the agricultural companies in the area which use

<sup>1</sup> The differences between 2000 and 2004 for the data collected in 2005 have been tested using McNamar test for paired samples.

<sup>2</sup> The differences between means for 2000 and 2004 have been tested with the T test.

only selected seeds bought from the authorized companies, the households use in reduce scale these type of seeds. Only 42% of the households are using selected seeds and only half of them are buying the seeds from the authorized companies.

The general image is that households in the area use in a reduce extent the environmental friendly practices. The most used are crop rotation, selected seeds and the fertilization with compost, but the percent of households using them is half of that of companies. The reduced utilization of the ecological practices among the households has some economic justifications. I the first hand, it is quite expensive to use such practices and probably most of the individual households cannot afford to use them. Secondly, the households exploit small plots of land and it is not efficient to plant windbreaks or to test soil for less then 0.5 hectares of land. Therefore, for the individual households it is difficult to use some of environmental friendly agricultural practices and due to the small plots of land exploited by them they are not a target group for implementing all the practices.

**Table II-4 Correlation between number of environmental friendly agricultural practices used by the household and some characteristics:**

	Number of environmental friendly agricultural practices used by the household <sup>3</sup>
Intention to extend the agricultural activity in the future <sup>4</sup>	0,212**
Concerned of environment's pollution in own village	0,152*
Income per household's member	0,115*
Total land exploit by the household	0,096*

\*Correlation statistically significant for  $p = 0.05$

\*\*Correlation statistically significant for  $p = 0.01$

Although, even if the number of the practices used by household did not change over 4 years, this is a good indicator for asses the profile of the households which are using more such practices. Trying to draw a portrait of the households which are using many environmental friendly agricultural practices one can says that these household have a bigger agricultural potential and intend to extend their agricultural activities. The quantitative data indicates a positive association between the number of ecological practices used by household and the total surface of exploited land and between the number of practices and the intention to extend the agricultural activities in the future (see Table II-4).

On the other hand, the utilization of the ecological agricultural practices is positively associated with the concerned for the environment's pollution in the village. Therefore, those who are preoccupied about the environment are more likely to practice an environment friendly agriculture. In additions the preference for an ecological agriculture is related with the level of education of the respondent and with sources of information for agricultural activities. Thus, the less educated people, whose without school are less likely to practice ecological agriculture, while those with high school are more inclined to use ecological practices (see TableA1.2 in the Annex1). On the other hand, those who consider the books and magazines and the agricultural engineer to be the best source of information have used more ecological practices compared to those who get

<sup>3</sup> The figures from the table are Pearson's correlation coefficients.

<sup>4</sup> See the description of indicators in Table A1.1 in the Annex1

information from parents, neighbors or relatives (see Table II-5). Generally speaking, those who are more informed more educated and more concern with the pollution is more inclined to use environmental friendly agricultural practices.

**Table II-5 Mean number of environmental friendly agricultural practices used by the household by the best source of information:**

Best way to learn how to practice agriculture is form:	Number of environmental friendly agricultural practices used by the household
books, magazines	<b>2,27</b>
parents	1,05
agricultural engineer	<b>2,09</b>
friends, relatives, neighbors	1,00
TV radio	1,26
others	1,68

### II.3. Differences among communes

Data from the Table II-6 indicates that there are some significantly differences among communes in the area with the respect to using ecological practices. At both levels, companies' and households' level, the utilization of ecological practices is higher in Vâlcele commune then in the others. In seems that the project have had a higher impact in Vâlcele. At the households' level Al Odobescu significantly differs from the others commune, having a higher mean. At the companies' level Cuza Vodă has a higher utilization of ecological agricultural practices.

**Table II-6 Mean number of environmental friendly agricultural practices used by companies and households by commune**

Commune	Mean for households	Mean for agricultural companies
Ciocănești	1,31	4,06
Cuza Vodă	1,03	5,00
Grădiștea	1,85	3,78
Independența	0,89	
Al Odobescu	<b>1,97</b>	4,00
Vâlcele	<b>2,32</b>	5,60
Vlad Țepeș	1,60	4,07
Total	1,56	4,42

Reading tip: the data from the table represents means of number of environmental friendly agricultural practices. The cells marked in the table indicate significant differences<sup>5</sup>. For instance, Vâlcele significantly differ from

<sup>5</sup> For the households the differences among communes have been tested using One-way-ANOVA procedure and there are statistically significant differences among communes for a  $p < 0.001$ . For companies the differences were not statistically tested, as long as the sample includes all the population of companies in the area.

the other communes at both levels. Households from Vâlcele use in average 2.3 ecological practices, compared with those from Vlad Țepeș who use in average 1.6 practices.

A second conclusion can be draw looking to the Table II-6, the average number of ecological practices used in agricultural companies is bigger then that in households. Looking to all population of households and companies one can mention that companies are using in average 4.4 ecological practices, while the households are using just 1.5. Again the differences between households and companies should be emphasized.

## **II.4. Conclusions**

1. There are high differences between agricultural companies and households in the project's area with the respect to the utilization of environmental friendly agricultural practices. The implementation of these practices at the companies' levels more developed, than at the households' level. At both levels crop rotation and utilization of selected seeds are more used then the other ecological practices. The utilization of compost as fertilizer and of the natural windbreaks has increased at both levels since 2000, due to the development of the project in the area.
2. At the companies' level the utilization of ecological practices has increased in the last 4 years. Data indicates an improvement on almost all the practices. At the individual level the data indicates an improvement only with respect to using compost as a fertilizer.
3. Almost all the companies in the area are using now selected seeds and crop rotation and more then 80% of them are using pesticides and chemical fertilizers under specialized control. The less used practices in the companies are natural windbreaks and natural insects' killer. The soil testing and the compost as fertilizer are used by a quarter of companies in the area. The qualitative data has supported these findings.
4. The general attitudes of the managers of the companies in the area are a favorable one, people being willing to introduce the environmental friendly practices, but stressing some difficulties encountered in the process of implementation.
5. Difficulties mentioned by the managers of the companies and by the local representatives are: lack of information and ok know-how about bio and eco agriculture, higher cost of productions, lack of a market for selling bio or eco products.
6. The utilization of the ecological practices at the households' level is quite low. Individual framers use crop rotation, compost and selected seeds more then other practices but the percent is quite low (about 40%). The lack of resources at the household level and the small surface exploited by each household brake the use of such practices (like soil testing, natural windbreaks).
7. From technical and economic reasons the individual farmers, with small exploitations, do not represent a target group for all the environmental friendly practices. In their case an

information campaign should be focused more on how to avoid the pollution and how to properly use the fertilizers and pesticides on small surfaces.

8. The utilization of ecological practices is not the same to all the households in the area. The households with a bigger surface, with higher income, which intend to extend their agricultural activity in the future, pay more attention to environmental friendly agricultural practices. Moreover, the more educated individuals, who are concerned about the pollution in their village and who consider the agricultural engineer and the books to be the best sources of information are more inclined to use ecological practices.
9. There are significantly differences among communes in the area with the respect to use of environmental friendly agricultural practices. Both the companies and the households from Vâlcele are using more ecological practices compared to the other communes. In Cuza Vodă the companies are also in the top of uses, while in Al Odobescu the households are.

### **III. WATER POLLUTION AND ITS CONSEQUENCES**

The project's area is known as one of the most polluted with the respect of water pollution with nitrites, due to the erroneous management of garbage, manure and chemical fertilizers and pesticides. The present project aims to reduce the water pollution in the area mainly by introducing of some new practices in the management of garbage and manure. The present chapter analyses the management of few sources of water pollution like latrine, garbage and manure. The chapter is structured in 4 parts: the first refers to latrine and practices related to the latrine use, the second is related to garbage and manure management, while the third is focused on water pollution according to the subjective evaluation of the people in the area and to its consequences for the public health. The end of the chapter is dedicated to some conclusions.

The analysis included in the chapter does not compare the different communes in the area because the project is in different stages of implementation in communes. According to the information provided by the local authorities in some communes, like in Independența, the building of the individual platforms begun at the end of 2004, therefore a comparison between communes it is not adequate now.

#### **III.1. The latrines**

The latrine is one of the most important sources of water pollution. The project did not develop yet activity especially target on the building of the latrine. However, during the information campaign developed in the area, some information about the polluted effect of the latrine has been disseminated to the population. The present assessment tries to identify the effect of this information with the respect to the practices related to the latrine use.

In the project's area 99% of the households have latrine, while 7% have also a WC inside home. The absence of the toilets inside home is determined by many factors. Among them one can mention: the absence of a public system of running water in the area, the absence of a public sewerage system in the area and the high cost of building a special room for toilet inside home. According to the survey data only 5% of households in the area have bathroom and 21% have running water. The situation of running water was improved in the last years due to the building of a public system of running water in Ciocănești (according to the data from townhall half of the households in the commune having running water).

Comparing the data collected in 2005 with the baseline study carried out in 2000 one can mention that the technique used to build the latrine are quite the same (see Table III-1). Almost all of the households in the area use to build the latrine just like a hole in the ground, without isolation from the ground (like concrete walls). This is the most pollutant version of the latrine, as long as the residuals are infiltrating in the ground. This type of latrine cannot be vacuumed and usually people use to cover it when is full, like to baseline study indicates. On the other hand, to build a latrine with concrete wall is more expensive than to have a 'classis' one, just dig in the ground.

**Table III-1 The technique of building the latrine in 2000 and 2005**

	%	2005	2000 (baseline study)
dig in the ground		94,2	95,2
dig with the lateral wall made by concrete		4,6	3,9
septic tank		0,6	
other		0,6	0,9
Total		100	100

On the other hand, there are some changes regarding the way to choose the proper place for building a latrine. The data from Table III-2 indicates a big difference in choosing the place for the latrine. In 2005 more than half of the respondents say that the most important thing is to be far from water, while in 2000 only 18% sustaining this alternative. In 2000 the most important thing was consider being far from home. In 2005 this statement has the same percentage of supporters (35%), but the rest of the distribution is changed. Five years ago 22% indicates as a most important factor “to be in the backyard” while now just 6% support this statement. It seems that people have understood that the latrine is a source of pollution for the water and it should be build as far as possible from the sources of water.

**Table III-2 The most important thing in choosing the place for the latrine**

	2005	2000 (baseline study)
to be far from the house	35,3	35,8
to be far from barn	0,8	1,7
to be far from well	57,2	18,2
to be in the backyard	6,4	22,5
other	0,2	21,6
Total	100	100

$$\chi^2 = 564,485, \text{ df} = 4 \text{ and } p < 0,001$$

In addition, the data regarding the distance between latrine and the source of water (well) has increased compared to 2000<sup>6</sup>, as data from the Table III-3 indicates. The distance between the well and the place of manure storage has increased too. Therefore, one can says that the people from the area understood the potential of pollution represented by the latrine and by the manure and now they tried to avoid the water pollution. However, the depth of latrine is quite the same, being 4 m in average in 2000 and 5 m in 2005.

**Table III-3 Distance between sources of water’s pollution and well (in meters)**

m	2005	2000 (baseline study)
Distance between latrine and well (mean)	34	18
Distance between manure storage and well (mean)	35	21

<sup>6</sup> The differences tested with T test are statistically significant for a level of significance  $p < 0,001$ .

### III.2. The garbage and the manure

One of the main goals of the project was the building of some garbage platform at the households' level and at the communes' level. In addition, the project aims to introduce a new management of garbage and manure in the area. There have been built about 2300 individual platforms in the 7 communes and people was trained to separate the organic and non-organic garbage, to collect it and to transport it to the commune's platform.

Garbage's storage. The data from the Table III-4 indicates that the project has had a strong impact with the respect to garbage management, more than half of the households in the area declaring that they separate the organic and non-organic garbage. Unfortunately we do not have available data about this from 2000, in order to measure the direct impact. However, another indicator is available, the existence of an individual platform for garbage in the households. This fact indicates the exposure of the households' members to the project and to the information disseminated during the project implementation. Thus, according to the data (see Table III-4) the households which has individual platform are more likely to separate the garbage, than the other households in sample.

**Table III-4 Garbage management in households with or without platform or rubbish cart (2005)**

%	Entire sample	No platform or rubbish cart in the household	Platform or rubbish cart in the households
Households which separate the organic and non-organic garbage	62	<b>56</b>	<b>81</b>
Households which throw the all garbage together, not depending on the content	34	<b>39</b>	<b>19</b>
Households which do not throw the garbage	4	<b>5</b>	
Total	100	100	100

Reading tip: the grey cells from the table indicate a statistically significant difference between two types of household. The significance of difference was tested using  $\chi^2$  test and is significant for a  $p < 0,001$

In fact, the comparison between 2000 (data collected during baseline study) and 2005 indicates that the garbage management has considerably changed. In 2000 most of the people (77%) from the area used to put the garbage 'somewhere in the yard or in the garden' (see Table III-5), while in 2004 just 20% used to store the non-organic garbage in the yard or in the garden and 24% are doing the same with the organic garbage. In addition, 51% of respondents indicate that they store the manure in a hole made in the garden or in the yard, while in 2004 only 25 are doing the same. The construction of the individual platforms has changed garbage's management, reducing in the same time the households' potential of water pollution.

Moreover, there are significant differences between households with platform and rubbish cart and those which do not have such facilities. About 66% of the households which have platform and rubbish cart store the organic garbage to the platform and 87% store the manure to the platform. Generally speaking, the management of the organic garbage and of manure is correct in the case of the households included in the project (see Table III-6).

**Table III-5 Place to store the garbage in 2005 and 2000 (baseline study)**

%	2005			2000 (baseline study)	
	Organic garbage	Non-organic garbage	Manure	Garbage	Manure
in a hole made in the yard or in the garden	26	27	25	2,4	51,3
somewhere in the yard or in the garden	24	20	29	77,7	10,7
to the individual platform	19	15	34		
we do not use to throw the garbage	15	12	3		
in bags, plastic bags or boxes	6	10	4	16	15,2
other	4	6	2	5,3	4,5
to the rubbish cart	2	6	0		
to the village platform	2	3	3	3,5	6,7
Total	100	100	100		

**Table III-6 Place to store the garbage and the manure depending on the existence of platform or of rubbish cart in the household**

%	Organic garbage		Non-organic garbage		Manure	
	No platform	Platform	No platform	Platform	No platform	Platform
to the individual platform	4	66	3	50	10	87
to the rubbish cart		10	0	23	0	0
in a hole made in the yard or in the garden	33	7	33	10	36	3
somewhere in the yard or in the garden	31	4	27	3	40	3
to the village platform	2	1	4	2	4	2
in bags, plastic bags or boxes	8	1	12	3	5	2
other	4	2	8	3	2	1
we do not use to throw the garbage	17	10	14	7	4	2
Total	100	100	100	100	100	100

Reading tip: the grey cells from the table indicate a statistically significant difference between two types of households. The significance of difference was tested using  $\chi^2$  test and is significant for a  $p < 0,001$

According to the data from the Table III-6 the management of non-organic garbage is not a correct one for the households included in the project. Only 23% of it is store to the rubbish cart, half of it being stored to the platform. The same problem was emphasized by the local representatives from the area. The local authorities underline the utility of the platforms and the fact that generally speaking people in the area properly mange the garbage but, have indicated as a problem that some people do not separate the garbage (even if answering to the questionnaire they declared to do it). In the opinion of the authorities the problem is related to the mentalities and to the education and it will probably take a quite long time to change the values and mentalities.

*They do not separate! Yesterday I was to the platforms; I have visited the bigger ones. [...] I have noticed that it is not a serious problem, but people don't understand. They use to say that the garbage is garbage, why should I select it?! I throw it here and it's enough! (Vice-mayor)*

*One can't say that the people didn't understand, they understood all of them but not all of them are considering them! Lets' say the 10-15% of them are not obeying to the rules even with the risk to be penalized. (Townhall's Secretary)*

*The people have been informed but we should change the mentality. [...] To teach people to select the garbage at home and to bring it to the platform selected, it's difficult! It takes one generation! (Townhall's Secretary)*

*There are difficulties! Most of them are related to the mentality. The people know how to store the garbage, but they are not firm in what they are doing! (Mayor)*

Individual platforms for garbage and manure. There have been built 2300 platforms in households from a total of 10693 households in the 7 communes, representing about 21% of total households. According to the local representatives the project has been welcomed by the people in the area. The number of applications was bigger then 2300 and generally speaking the people wanted to build such a platform in their households.

According to the survey data 80% of the population in the area considers that the platform is useful, but only 23% are willing to pay for its building. The justification is an economic one. People in the area consider that they cannot afford to pay it. Asked what amount of money can afford to pay for the platforms, the respondents indicates an mean of about 1 million lei (about 30 USD) which is about 10% of the total cost of the platform. Therefore, without an external help the people in the area cannot build it, due to the lack o money.

**Table III-7 Percent of households considering the platform useful depending of existence of a platform in a household**

%	Not at all	Not so much	Much	Very much	Total
No platform in household	7	18	51	24	100
Platform in household	1	6	41	53	100

Reading tip: the grey cells from the table indicate a statistically significant difference between two types of households. The significance of difference was tested using  $\chi^2$  test and is significant for a  $p < 0,001$

The data from the Table III-7 indicates that the households which have a platform are significantly more favorable attitudes and consider in a greater extent that the platform is useful then the other household consider. Moreover, the households which have a platform declared in greater extent that they will to pay for building it<sup>7</sup>. Another fact that should be motioned is that the general representation in the area is that the platforms are built by the local authorities with the help of World Bank. About 80% of households which own a platform declared that it is built by local authorities without the help of the household's members.

Garbage's evacuation. On the other hand, a comparison between the ways to evacuate the garbage in 2000 and 2005 indicates some changes with the respect to garbage management. Data from the Table III-8 shows a decrease of percentage of households which se to evacuate the garbage on the field, about 8% in 2000 and 3% in 2005. Moreover, one can mention an increasing in garbage's evacuation by transporting them to the village platform. It should be point out that in

<sup>7</sup> The difference between two types of households is statistically significant. The significance of difference was tested using  $\chi^2$  test and is significant for a  $p < 0,001$ .

2000 the village platforms were not ecologically built and usually they represented a place in which the people in the area use to transport the garbage, but there were not a real platform, just an unarranged place on the field.

**Table III-8 Way to evacuate the garbage**

	%	2005	2000 (baseline study)
to the village's garbage platform		86,7	79,1
on the field		3,3	8,5
on the road, in front of the yard		0,2	
burning it		2,9	2,1
other		3,5	5,3
we do not use to throw the garbage		3,3	1,3
Total		100	

Another indicator for the garbage evacuation is its' frequency. According to the survey data people use to evacuate the organic garbage and the manure in average at 2 months and the non-organic garbage at 2 months and a half. The frequency of evacuation is longer then that scheduled by the project, but this is a rough indicator and it depends on many factors, mainly on the dimension of the livestock in each households.

However, even in each commune there are new platforms, some people use to transport the garbage to the 'older platforms'. The phenomenon is not very spread but in some cases it represents a source for water's pollutions. The local representatives and the doctor from Grădiștea have mentioned that some people are still using to transport the garbage to the older place for storing garbage, near a waterway, contaminating the water. The local authorities adopted punishment measures for those who throw the garbage in this place, but some of the village's people are conservative.

*Many people are throwing garbage, small corps in this water and they have polluted it. It is a place in which most of the people from the neighborhood use to throw the garbage. We have take into account the sanitation of this water ... its cleaning ... The water there is extremely infected.*  
(Mayor)

One should mention that in all the communes from the area the local authorities have adopted measure of punishment for the people which use to throw the garbage in unauthorized places. Moreover, the villages platform are permanently controlled are people are not allowed to throw unselected garbage (organic and un-organic garbage together).

A possible solution for solving the problems related to garbage evacuation is the establishment of a public service for garbage's evacuation. The measure is supported by the villages' people, 61% of the respondents declaring that they consider to be useful the organization of such service. Moreover, the local authorities declared they are in course of organizing a public service for garbage collection in 5 of 7 communes included in the project: Vâlcele, Ciocănești, Grădiștea, Cuza Vodă, Independența. In all cases the establishment of this service is done with the help of World Bank, which assist the local authorities in buying tractors and trails for the transport of garbage to the platforms and in organizing the service.

According to the local representative, in Al Odobescu the village people are very poor and

they cannot afford to pay for this service. This is the main reasons for not organizing it in this commune. On the other hand the data indicates statistically significant differences among communes in the areas, with the respect to people attitudes towards this service. Thus, the residents of Al Odobescu and Cicănești believe that a public service for garbage's collection is not useful for their village, while those who are living in Vâlcele and Vlad Țepeș consider this service welcomed (see Table A1.3 in the Annex1).

*A public service for garbage's collection is good, but we can't organize it because of lack of money and the citizens do not have the possibility to pay for such services in order to benefit of them. We can organize it because we have tractors and trails, but they can't afford to pay it. But [...] people don't have financial resources for paying these activities. (Local representative, Al Odobescu)*

'Environmental friendly households'. We have tried to draw a profile of the household which has not represented a potential of environment pollution, having a correct garbage and manure management. We have defined a non-polluted household as one which use to separate the garbage, which store the organic garbage and the manure to the individual platform, which store the non-organic garbage to the rubbish cart and which evacuate the garbage to the village platform.

**Table III-9 Correct garbage's management by some characteristics**

	Pearson's correlation coefficients
Concerned about environment pollution	0,268**
Number of ecological friendly agricultural practices	0,310**
Level of education (respondent)	0,106*
Age (respondent)	-0,102*
Income/ person last month	0,106*

\*Correlation statistically significant for  $p = 0.05$

\*\*Correlation statistically significant for  $p = 0.01$

According to the data from the Table III-9, the households which have correct garbage's and manure's management are those which high income per person and which use to practice an environmental friendly agriculture. Moreover, the members of these households have a high level of education, are young and are concerned about environment pollution. The data suggest those households which use environmental friendly agricultural practices have a correct garbage management, having positive attitudes towards environment protection.

### **III.3. Water's pollution and its consequences**

Even the local authorities and the medical stuff in the area warn people about water's pollution and about the dangers represented by the water, the inhabitants of the 7 communes consider the quality of water as very good or good. About 85% of interviewed people believe that the water in their commune is of very good or good quality.

Despite of this optimistic view, the local authorities and the medical stuff declared that the well' water is polluted in the areas and it represents a danger especially for children. The mothers are leant by doctors and nurses to use only mineral or natural water for babies and generally

speaking, all the people are advised to avoid drinking water from wells. The problem mentioned by the medical stuff is that of mentality. The people do not understand the danger represented by the poisoned water and continue to drink it and to give it to the children. Moreover, some of them boiled the water in order to reduce the danger of contamination, but in this way the nitrites concentration increase and the danger of intoxication in higher.

*The water is polluted with nitrites. The people have small yards and the water is near by the place of garbage's storage. (Nurse)*

*The samples are not good; the water is not drinkable everywhere in Vâlcele, only in a well deep of 100m. Due to this fact the children, even those older then 1 year are getting intoxication with nitrites. The adults have skin diseases, and, on the long run I have heard that it can produce cancer. This is the situation in our commune, the water is not drinkable. (Doctor)*

The situation gets worse due to the fact that usually the wells in households are not very deep (the average is about 15m according to the survey data) and are more exposed to the pollution. Moreover, like the nurse mentioned, many yards are small are the distance between the pollution sources (place of garbage's and manure's storage) and the well is quite reduced. An additional factor of risk is the latrine which in almost all the households has no concrete walls and the residuals infiltrates into the phreatic water. As a results there have been registered some cases of baby blue disease and other diseases generated by the water.

**Table III-10 Number of diseases in 2004 depending on commune**

	Grădiştea	Odobescu	Ciocăneşti	Vlad Țepeş	Independența	Cuza Vodă	Vâlcele
Diarrhoea	3	20	14	-	11	30	-
Blue diseases	0	2	0	1	2	1	3
Tuberculosis	2	1	1	1	2	3	2
Skin diseases	10-15	7-8	-	-	80	60	-
Hepatitis	2	0	0	0	-	2	0

The data from the Table III-10 indicates that in 2004 there have been registered 9 cases of baby blues disease, the most severe effect of the pollution. According to the medical stuff, in all the cases the parents did not respect the warning about the danger represents by the quality of water for the babies. In Ciocăneşti and Grădiştea there are no such cases in 2004. Unfortunately not in all the communes the situation of disease was available for year 2000, but it seems that the number of cases of baby blues disease is quite the same.

However, the implementation of the project has had some effect related to the reduction of pollution. People in the area understood that the garbage and the latrine represent a source of pollution. Thus, data from the Table III-3 indicates that the distance between sources of water pollution (garbage, manure and latrine) and well has significantly increased in the last 4 years. Moreover, in Ciocăneşti was build a public system of running water, therefore half of the households in commune have access to running water. The quality of the water is controlled and the risk of intoxication despaired. Looking to the data about number of diseases in 2004, one can observe that in Ciocăneşti there is no blue disease in 2004. In Al Odobescu 5 wells have been rehabilitates with the help of World Bank, helping to improve the quality of water in the area. The

medical stuff has noticed the changes.

*For two years the things have changed very much. Since the ecological platforms were built. The remains, especially the manure is stored there. Before, they used to throw these remains near by the lake. [...] It is a big difference. The people begin to understand and to use the individual platforms. Slowly, slowly! It is difficult but the people are receptive and I believe will be better then now! (Doctor)*

### **III.4. Conclusions**

1. Comparing to year 2000 (baseline study) the risk of water's pollution within household has decreases because the distances between the source of water and the sources of pollution (latrine and place to store garbage and manure) the have increased.
2. All the households in the area have latrines build without concrete walls, which represents a high pollution potential. However, different from the baseline study people change the criteria to choose a place for building it and understood that it represents a source of water's pollution.
3. Generally speaking the garbage's and manure management is a correct one, especially in the households with individual platform. More then half of the population in the area use to separate the garbage and use to properly evacuate the garbage to the village platforms.
4. The management of organic garbage and of manure is a correct one, especially in the households with garbage platform. The management of non-organic garbage is not so correct, even in the households with platform and rubbish cart. The local authorities have signaled the same thing and explaining the improper management by the conservative peoples' mentality.
5. In 5 of the 7 communes (Vâlcele, Ciocănești, Grădiștea, Cuza Vodă, Independența) included in the project the local authorities are organizing public services for collecting garbage. The inhabitants' attitudes towards this public service differ from one commune to the other. In Vâlcele and Cuza Vodă people are sustaining this service, while in Al Odobescu and Ciocănești the residents consider it useless.
6. The general attitude towards individual platforms is a positive one, people in the area considering them useful in a great extent. However, the inhabitants are not willing to pay for building one.
7. Even there are some cases of diseases generated by the polluted water, the medical stuff and the local representative consider that the situation get improved in the last years.

## IV. IMPACT OF THE POLLUTION CONTROL PROJECT

The main objective of our research was to assess the impact of the pollution control project. Several dimensions were taken into consideration: information people and other important actors in the community have on the project, implementation of the project (difficulties, contribution of different actors to the implementation), the impact of the project at the individual level, its influence at community level, diffusion of the project and, finally information on ecological agriculture. Process indicators and output indicators were used in order to accurately evaluate the various aspects mentioned above.

The present chapter uses data representing individual perceptions from the survey done on a representative sample of the households in the implementation area as well as data coming from in-depth interviews with authorities, managers of agricultural associations, agricultural consultants and doctors.

Given that the implementation of the project is still developing, the present report should be rather regarded as a monitoring of the work in progress.

### IV.1. Information on the existence of the project

Overall, the project is known in the implementation area. The majority of the people in the survey (63%) have heard of the project while less people (37%) didn't know about its existence. In 2000, the year of the benchmark study, the data showed a reversed situation: only 24% of the people declared they had heard of the project and 76% had not heard of it.

**Table IV-1. People have heard of the project by commune**

%	Ciocănești	Cuza Vodă	Grădiștea	Independența	Alexandru Odobescu	Vâlcele	Vlad Tepeș	Total
Yes	54	32	65	80	80	65	67	63
No	46	68	35	20	20	35	33	37
Total	100	100	100	100	100	100	100	100

The grey cells indicates statistically significant differences among communes, tested with chi-square test,  $p < 0,001$

Looking at the differences among communes we can see that there are significant differences among communes in respect to the information people in the survey have on the project. Significantly less people are informed about the project in Cuza Vodă and significantly more people are informed about the project in Independența and Alexandru Odobescu. There is a high probability that these differences can be attributed to the efficiency/inefficiency of information campaigns that were developed in the communes in the area. Still, the stage of implementing the

project might play a role in this situation: if the project is at the beginning then it is more actual for people (probably the case in Independența).

Of those who are aware of implementation of project, 65% declared they had an accurate knowledge about the content of the project and 34% didn't know exactly the activities that were undertaken in relation to the project. All analyses in this chapter done on data from the survey take into consideration people who know about the content of the project (N=196) and thus can express an opinion on it. We will refer to this part of the sample as "people in the survey" in order to indicate the source of the data and to simplify.

The project is well known by agricultural associations in the area according to the results from qualitative data. Managers of these companies have information on the existence of the project as well as on its components and development. The sources of information mentioned by the managers were the town hall (most often invoked) either through local authorities directly or activities organized in order to make the project known, other agricultural associations or consultancy activities they took part in (those organized by Fordoc were often referred to).

*I've heard of the project from the town hall. I know exactly its components. It is very good for our company and our community because in the near future we will be able to use natural fertilizers which are cheaper in comparison to the chemical fertilizers which go as high as 2,5 milion lei per hectar. By using this natural fertilizers we consider that we develop ecological agriculture. (manager of agricultural association, Gradistea)*

Authorities indicated the various activities in which they involved in order to make the project known to the community and also they emphasized the good cooperation they had with Ministry of Environment and Fordoc Institute. Activities mentioned were meetings with residents in the community, posting information in town hall building, public local council meetings, common activities with schools in localities, contests. In some cases, local authorities and agricultural consultants mentioned they went and talk directly to people in order to explain them the utility of project and correct management of garbage.

## **IV.2. Implementation of the project**

Qualitative data indicates that, generally speaking, the process of implementing the project went smooth. Many people interviewed acknowledged the difficulties that existed at the start when people in the community didn't understand the purpose and usefulness of such enterprise but also emphasized the progress that was made more recently.

*A large part of the population is old... here is very hard to eliminate old mentalities, they are more conservative... The old system was interested in keeping them uninformed, less educated and it is difficult to teach them these things. (vice-mayor)*

*First, people were not willing to receive in their yards such a thing (the platform)... they thought it was a trick or they will have to pay for it later, they didn't believe it was free. After first platforms came into being the others saw they were a good thing, they were useful and in 2003, in the summer, people began to come in large numbers to make an application for them to receive the platform. (agricultural consultant)*

The main problems mentioned by our subjects were either related to the structure of the population in the area as most population in some villages is aged or with “old mentalities” that prevent people from opening to change.

Also mentioned was the fact that people who were not selected to be part of the project were discontent as, in time, the demand for being the beneficiary of individual platforms increased while the project itself developed in the area.

Other difficulties our subjected referred to were those having to do with garbage management (some people still continue the old ways, they do not sort out the garbage correctly, they deposit it on the lake shore, they use the individual platforms and the rubbish carts for other purposes).

There is another problem indicated by our subjects relating to the technical issues: it is rather difficult in respect to the common platforms to use the manure as fertilizer as people bring continuously garbage and store it without letting it ferment. A solution would have been two smaller platforms or organizing in such way that at a certain point in time the storage will stop and allow the manure undergo fermentation.

Overall, though, the opinions converge to the idea that the project was successfully implemented so far.

#### Assessment of contribution of different actors in the implementation of the project

The local authorities are regarded by the vast majority of people in the survey as having contributed to the activities included in the project, their help being acknowledged by 90% of our subjects. Significantly less appears to have contributed the people in the local community, 42% of those in the sample considering that residents helped with the activities carried out within the project.

According to perceptions of population in the sample, local authorities involved to a great extent in the implementation of the agricultural pollution control project.

**Table IV-2. To what extent the following contributed to the implementation of the project:**

%	To a very large extent	To a large extent	To a less extent	Not at all	DK/ NA
Local authorities	45	45	7	1	2
People in the community	12	30	30	20	8

Looking at peoples’ perception in regard to the contribution of local authorities in communes, we can see that there are communes (Independența) where local authorities were regarded as having contributed more to the development of the project in comparison to other communes in the area (Cuza Vodă). Significantly less are perceived people in the community to have played a significant part within the project in Grădiștea and Cuza Vodă while in Independența seems to be best situation for this indicator.

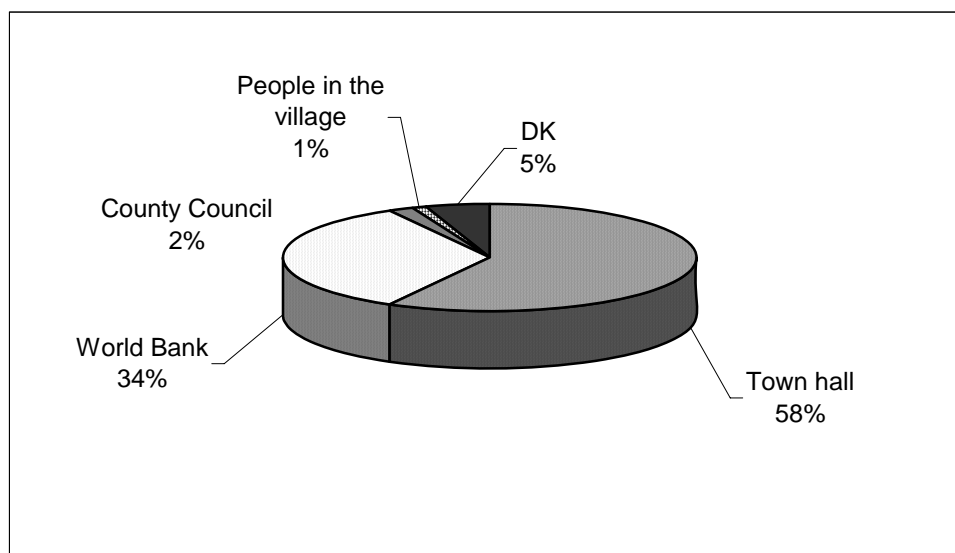
**Table IV-3. Means for contribution to the development of the project by commune**

	Ciocănești	Cuza Vodă	Grădiștea	Independența	Alexandru Odobescu	Vâlcele	Vlad Tepeș	Total
Local authorities	1,59	2,07	1,75	1,15	1,72	1,91	1,94	1,64
People in the community	2,30	3	3,38	2,29	2,57	2,55	2,47	2,63

The means are computed on a four point scale: contribution to a very large extent, to a large extent, to a less extent, not at all. (the closer the value to 1, the bigger is the contribution regarded). The means indicate statistically significant differences among communes for both indicators, tested with ANOVA,  $p < 0.001$

When asked who has had the most important contribution in carrying out the necessary activities, people mentioned once again town hall and also as a significant actor World Bank.

**Figure IV-1 Most important contribution to the implementation of the project**



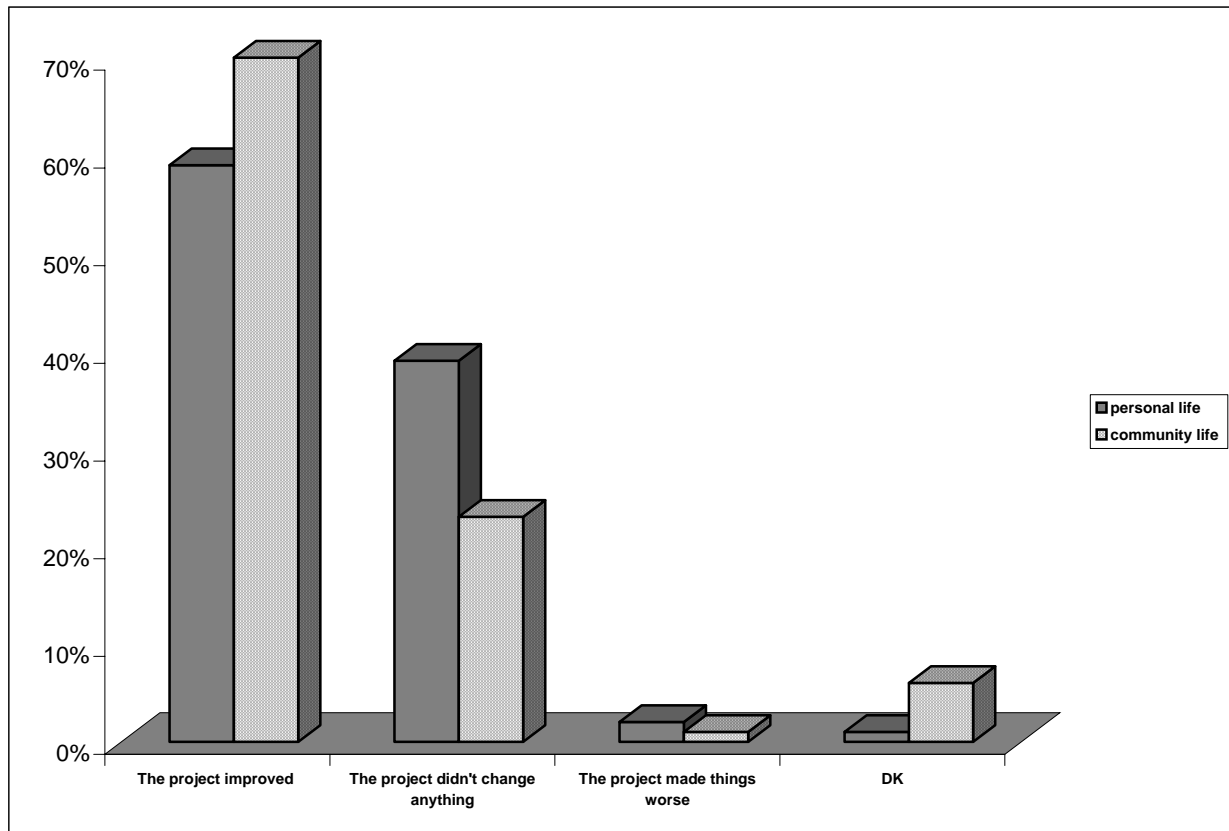
In answering (open ended question) who should involve more in order to secure the success of the project, people in the sample mentioned the same important actors: local authorities (31%), people in the community (17%), the government (2%), the county council (4%) and World Bank (2%). This hierarchy indicates that people are aware to a certain extent of the importance of their involvement in the project, people in the community being mentioned in the second place as important actors in implementation of the concrete activities aiming at controlling pollution in the area.

### **IV.3. The impact of the pollution control project**

According to the survey data, in people's perceptions on the influence of the agricultural pollution control project it is evident that both at individual and community level the impact of the project was strong. It seems that our subjects consider in a higher percentage the influence on

community life as positive in comparison to the impact on individual's life. This is very much in accordance to one's expectations. Usually, locally developed projects apart from resolving problems they are targeted at, also contribute to strengthening relationships among local people, those between local authorities and residents in the community, increase levels of interpersonal and institutional trust, in other words contribute to the social capital.

**Figure IV-2. Impact at the individual and community**



There are no significant differences among communes in respect to the impact that the project has had either on individuals' life or community in itself. This means that people perceive in a common way in the different communities the mode in which project's influence was exerted.

When asked who benefited most from the project, a percentage of 71% of the people in the survey considered that citizens were those who most gained from the implementation of the project. 9% of the people mentioned that local authorities benefited from the existence of the activities developed in the area.

Qualitative data also indicates the winner of the project as being the citizens in the area. There is a general agreement among those interviewed that people are those who gained most from the implementation of the pollution control project. Community in itself is also designated as being such a winner.

*People were those who gained most from the project. And also the commune. The project was not to each of them but mainly to the community. I believe that in few years from now when the forest will grow they will benefit even more because the forest is very important. It gathers clouds for rain, reduces the dust, makes shadow and is for fun, too. ... it is a great gain the forest especially that they deforested massively in the past years. (agricultural consultant, town hall)*

Looking at the opinions expressed by authorities and managers of agricultural associations, we can notice that there is wide agreement on the fact that the project influenced to a great extent people's lives.

First, there is a social learning process through which people have been. They have learned that there is a better way to carry out things: to keep their yards clean, their village clean, to develop environmentally friendly methods of doing agriculture to their benefit. Despite the problems being mentioned (some of the people use the platforms for other purposes, some do not sort out garbage as they should, some still take their garbage on the lake shore), there is an important gain of the project: they know now the best way in which they should organize their activities.

Opinions converge to the idea that it might take some time until all people in the community will develop behaviors in conformity to the norms but, in the short time, many of them already did and there are good chances that, through diffusion, most part of the communities involved in the project will develop actions in the same direction. There is also the probability that such a project can boost people's hopes for a better way of living which is extremely important for further social development processes at the community level.

*This is another way of living which gives people hopes of existing in a cleaner and more civilized environment and get rid of old habits of disposing the garbage everywhere – in old days there was garbage everywhere- today is not the case anymore. (mayor)*

*... even those who didn't have platforms in their yards understood the aim of the project and the way in which the garbage needs to be sorted and deposited on the common platforms. (legal consultant, town hall)*

Also, to a certain degree, the project made a contribution to the strengthening of the relationship between local authorities and people in the community. First, it made local authorities seek actively communication with residents and change attitudes towards them in the direction that citizens are probably less seen now as recipients of authorities' decisions but more like partners in cooperative endeavors.

*Like any other action that asks for more involvement from your part and better communication with citizens, (as a result of this project) relationship is a little bit stronger now, as institution we act differently in our relations to people and also as people of the commune... in older times and sometimes today there was a coldness between town hall and people... Now, we are all people and we have to come down to earth. (legal consultant, town hall)*

Still, not in all cases this happen and some of the subjects interviewed mentioned that there is little visible result in respect to the project in order for it to influence relations in the community.

*At this time nothing has changed. We cannot see anything yet. We should see results. But people are just the same. They know what to do with the garbage but they don't see the result of their activity because they cannot use the organic fertilizer yet. (mayor)*

The dominant opinion though is that the project improved communication among people in communes, between people and local authorities and even helped in addressing other issues that are important to the community.

*People look at us different now, it is about trust, they trust us and we trust them. (vice-mayor)*

*I consider the relation between town hall, citizens and even agricultural associations changed for the better. Now there is continuous dialogue among us. We are talking about project but also about how to use the land. Some time ago there were land owners who didn't cultivate the land. By discussing with them we reached the conclusion that they should use it or give it to those who can cultivate the land. In any case, it shouldn't remain uncultivated. (Legal consultant, town hall)*

In respect to the health state of the population in the area it is difficult to identify significant change. Most of the subjects expressed the opinion that in the short and medium range one cannot observe major change in health state. The doctors and nurses interviewed agree to this idea and underline that where people use water from the fountains they still get sick as the water in the fountains continue to be polluted. Most important are skin diseases and nitrites intoxication.

It seems that a more comprehensive approach should be used in order to address these health problems: on the one hand, building infrastructure on several dimensions: running water, a sewing system, continuing the building of ecological platforms for more households and a collecting garbage system at local level. On the other hand there is the need for more educating the people about the quality of drinking water, and of water in the lake and canals, educating young mothers about the health risks for their new borns.

Also, there is still need for further explaining the role of the project to all people in the community, maybe with a special focus on those who don't respect the rules of sorting out the garbage.

#### **IV.4. Diffusion of the project**

In order to completely evaluate the success of a certain program, it is important to look at the opportunities for replication. At this early stage though we can only take into consideration the interest that our subjects mentioned that other people, companies expressed in their experience with the project.

Almost all local authorities interviewed indicated that mayors from other localities were interested in the pollution control project and asked about its implementing.

*There was interest in the project, the mayors from other localities came, they saw the platforms and the machines. They visited the land on which we plant trees and asked: How did you do it? It is kind of ambiguous... it is like in a house where my neighbor pollutes me. If I was the only one (keeping things clean) it is for nothing, he has to do it, too. This is how such projects come to*

life. (agricultural consultant)

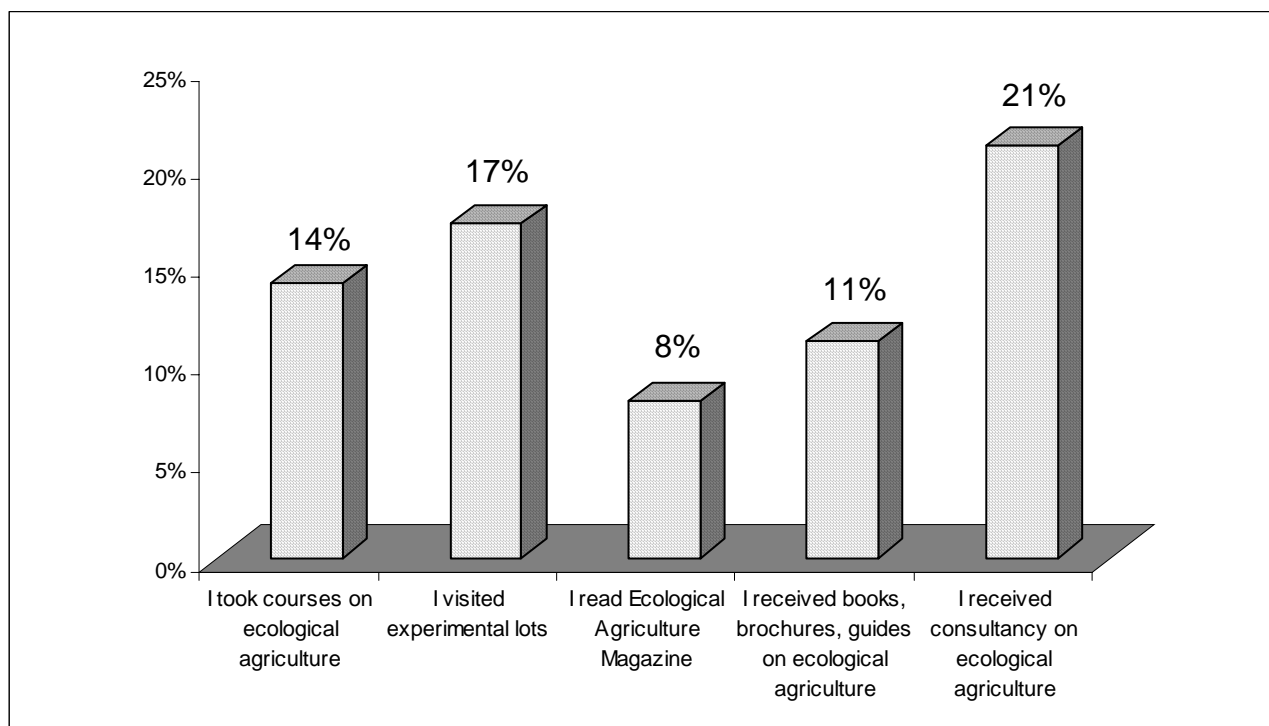
Yes, mayors and citizens were interested, they are envious at us in a good sense because through this program we clean up the village and this project made me create a new service, that of salubrity within the town hall (mayor)

All firms in the area took an interest in what we are doing, those in the field of agriculture for the platforms and the commercial firms for the rubbish carts because all companies have now to obey by the laws protecting the environment. (manager of agricultural association involved in project)

#### Participation in activities relating to ecological agriculture

In respect to the number of the activities attended, of the people in the survey, 64% didn't participate in any of the activities related to ecological agriculture, 18% took part in one activity, 10% were involved in two such pursuits and 6% in three to five activities. In average, those who were involved in activities about ecological agriculture took part in 1.97 such pursuits.

**Figure IV-3 Activities related to ecological agriculture attended**



The majority of managers of agricultural associations reported that they know about ecological agriculture but the information on the issue is not always accurate or complete. The perception is many times related to the type of fertilizers used in ecological agriculture.

**Table IV-4. Impact of the information activities within the project**

	%	To a very great extent	To a great extent	Less	Not at all
Information was useful for my activity		20	51	28	1
I use information obtained in my practical activity		21	45	28	6

Productivity is also reported to be influenced as a result of participation in the information activities about ecological agriculture: 63% of the people in the sample consider it increased while 37% of them mentioned that the productivity stayed the same. This type of information and consultancy activities prove to be very useful to farmers as their perceptions indicate.

#### **IV.5. Conclusions**

1. Generally speaking, the pollution control project has had until now an important and positive impact both at individual and community level. However, given that the project is still in progress we consider the data as describing an intermediate point in time in developing of the project, a monitoring.
2. Information on the project. People in the survey are informed about the existence of the project, the majority of the people declared that they have heard of the existence of the project. Also, there is an important change in comparison to year 2000 when the vast majority of the people had not heard of the project. The pollution control project is also well known to agricultural associations in the area, as showed by qualitative data.
3. Implementation of the project. Overall, the opinions of people interviewed converge to the idea that the project was successfully implemented so far. Some problems were mentioned regarding the structure of the population in the area as most population in some villages is aged or the “old mentalities” that make people being more resistant to change. Other difficulties our subjected referred to were those having to do with garbage management (some people still continue the old ways, they do not sort out the garbage correctly, they deposit it on the lake shore, they use the individual platforms and the rubbish carts for other purposes). In regard to contribution of different actors in the implementation of the project, according to perceptions of population in the sample, local authorities involved to a great extent in the implementation of the agricultural pollution control project.
4. The impact of the pollution control project. The vast majority of our subjects considered that the project has had an important and positive impact on individuals’ lives as well as on community in itself. First, people have been through a social learning process that introduced them to a better way of carrying out things: to keep their yards clean, keep their village clean, to develop environmentally friendly methods of doing agriculture to their benefit. While it may take some time for all the people to conform to the rules imposed by the project, a change in behavior is observable according to our subjects. Also, to a certain degree, the project made a contribution to the strengthening of the relationship between local authorities and people in the community, to an increase in trust among citizens and authorities and even helped in addressing other issues that are important to the community. In respect to the health state of the population in the area no significant change has been identified.
5. In respect to the impact that information on ecological agriculture has had on activity of farmers, the data indicate that a change occurred according to their perceptions: the information was put into practice and their productivity was also influenced in a positive way.

6. It seems that a more comprehensive approach should be used in order to address the health problems and further change things in the area: on the one hand, building infrastructure on several dimensions: running water, a sewing system, continuing the building of ecological platforms for more households and a collecting garbage system at local level. On the other hand there is the need for more educating the people about the quality of drinking water, and of water in the lake and canals, educating young mothers about the health risks for their new born.
7. There is still need for better information on the utility of individual platforms, their role in protecting environment and individuals' health, rules of sorting out the garbage, the importance of ecological agriculture and its exact content.

## V. CONCLUSIONS AND RECOMMENDATIONS

### V.1. Conclusions

#### Environmental friendly agricultural practices

1. There are high differences between agricultural companies and households in the project's area with the respect to the utilization of environmental friendly agricultural practices. The implementation of these practices at the companies' levels more developed, than at the households' level. At both levels crop rotation and utilization of selected seeds are more used than the other ecological practices. The utilization of compost as fertilizer and of the natural windbreaks has increased at both levels since 2000, due to the development of the project in the area.
2. At the companies' level the utilization of ecological practices has increased in the last 4 years. Data indicates an improvement on almost all the practices. At the individual level the data indicates an improvement only with respect to using compost as a fertilizer.
3. Almost all the companies in the area are using now selected seeds and crop rotation and more than 80% of them are using pesticides and chemical fertilizers under specialized control. The less used practices in the companies are natural windbreaks and natural insects' killer. The soil testing and the compost as fertilizer are used by a quarter of companies in the area. The qualitative data has supported these findings.
4. The general attitudes of the managers of the companies in the area are a favorable one, people being willing to introduce the environmental friendly practices, but stressing some difficulties encountered in the process of implementation.
5. Difficulties mentioned by the managers of the companies and by the local representatives are: lack of information and ok know-how about bio and eco agriculture, higher cost of productions, lack of a market for selling bio or eco products.
6. The utilization of the ecological practices at the households' level is quite low. Individual framers use crop rotation, compost and selected seeds more than other practices but the percent is quite low (about 40%). The lack of resources at the household level and the small surface exploited by each household brake the use of such practices (like soil testing, natural windbreaks).
7. From technical and economic reasons the individual farmers, with small exploitations, do not represent a target group for all the environmental friendly practices. In their case an information campaign should be focused more on how to avoid the pollution and how to properly use the fertilizers and pesticides on small surfaces.
8. The utilization of ecological practices is not the same to all the households in the area. The households with a bigger surface, with higher income, which intend to extend their agricultural

activity in the future, pay more attention to environmental friendly agricultural practices. Moreover, the more educated individuals, who are concerned about the pollution in their village and who consider the agricultural engineer and the books to be the best sources of information are more inclined to use ecological practices.

9. There are significant differences among communes in the area with the respect to use of environmental friendly agricultural practices. Both the companies and the households from Vâlcele are using more ecological practices compared to the other communes. In Cuza Vodă the companies are also in the top of uses, while in Al Odobescu the households are.

#### Garbage and manure management

10. Comparing to year 2000 (baseline study) the risk of water's pollution within household has decreases because the distances between the source of water and the sources of pollution (latrine and place to store garbage and manure) the have increased.
11. All the households in the area have latrines build without concrete walls, which represents a high pollution potential. However, different from the baseline study people change the criteria to choose a place for building it and understood that it represents a source of water's pollution.
12. Generally speaking the garbage's and manure management is a correct one, especially in the households with individual platform. More then half of the population in the area use to separate the garbage and use to properly evacuate the garbage to the village platforms.
13. The management of organic garbage and of manure is a correct one, especially in the households with garbage platform. The management of non-organic garbage is not so correct, even in the households with platform and rubbish cart. The local authorities have signaled the same thing and explaining the improper management by the conservative peoples' mentality.
14. In 5 of the 7 communes (Vâlcele, Ciocănești, Grădiștea, Cuza Vodă, Independența) included in the project the local authorities are organizing public services for collecting garbage. The inhabitants' attitudes towards this public service differ from one commune to the other. In Vâlcele and Cuza Vodă people are sustaining this service, while in Al Odobescu and Ciocănești the residents consider it useless.
15. The general attitude towards individual platforms is a positive one, people in the area considering them useful in a great extent. However, the inhabitants are not willing to pay for building one.
16. Even there are some cases of diseases generated by the polluted water, the medical stuff and the local representative consider that the situation get improved in the last years.

#### The impact of the project

17. People in the survey are informed about the existence of the project, the majority of the people declared that they have heard of the existence of the project. Also, there is an important change in comparison to year 2000 when the vast majority of the people had not heard of the project.

18. The opinions of people interviewed converge to the idea that the project was successfully implemented so far. Some problems were mentioned regarding the structure of the population in the area as most population in some villages is aged or the “old mentalities” that make people being more resistant to change.
19. The vast majority of our subjects considered that the project has had an important and positive impact on individuals’ lives as well as on community in itself. First, people have been through a social learning process that introduced them to a better way of carrying out things: to keep their yards clean, keep their village clean, to develop environmentally friendly methods of doing agriculture to their benefit. In addition, the project made a contribution to the strengthening of the relationship between local authorities and people in the community, to an increase in trust among citizens and authorities and even helped in addressing other issues that are important to the community.

## **V.2. Recommendations**

### Environmental friendly agricultural practices

1. This component should be focused more on the agricultural companies in the area, because they represent the main actors in the agricultural activities. An information campaign about environmental friendly agricultural practices, about how to obtain certificate of bi- producers and about the market for such products will assist the companies in changing their activity.
2. The information campaign should be associated with some measures of financial support for those producers who begin to produce according to bio- or eco- standards. The financial support is needed in order to assist them for changing the technology.
3. At the individual households level an information campaign should be designed in order to inform the village’s people about pollution produced by some agricultural practices. This campaign should emphasize the correct management of chemical nutrients and of pesticides in order to avoid pollution in the area.

### Garbage and manure management

4. An information campaign should be designed in order to stress the role of separation of organic and non-organic garbage for avoiding pollution and for recycling the garbage. A special attention should be paid to the management of non - organic garbage which is not a correct one in the majority of the households in the area, even the households with platform and rubbish cart having in many cases an inaccurate management for glass, plastic and iron remains.
5. A support for the establishment of a public service for garbage evacuation is welcomed for the area. The establishment of such service will reduce the incorrect evacuation of garbage and will stimulate people to separate the garbage in organic and non-organic.

6. The latrines still represent a source of water's pollution, but the lack of information and of financial resources do not allow people to do some changes. An information campaign should be initiated in order to train people how to build an unpolluted latrine. Moreover, the assistance provided to the people in the area in building latrines, in terms of know-how and of financial support, will be helpful in reducing water pollution.
7. It seems that a more comprehensive approach should be used in order to address the health problems and further change things in the area: on the one hand, building infrastructure on several dimensions: running water, a sewing system, continuing the building of ecological platforms for more households and a collecting garbage system at local level. On the other hand there is the need for more educating the people about the quality of drinking water, and of water in the lake and canals, educating young mothers about the health risks for their new born.

## ANNEX 1. TABLES AND INDICATORS USED IN CHAPTERS 2 & 3

Table A1 1 The indicators used in analysis

Name of indicator	Description
<b>Intention to extend the agricultural activity in the future</b>	Built as an index which count the positive answers to the questions: <i>In the following years do you intend to buy agricultural land, to buy livestock, to borrow money for agricultural activities, to set up an agricultural company</i> and the negative answers to the question: <i>In the following years do you intend to stop agricultural activity</i> . The index takes values from 0 to 5, 0 meaning that the household does not intend to extend the agricultural activity and 5 meaning that the households is very decided to extend their agricultural activity.
<b>Concerned of environment's pollution in own village</b>	Built as a mean of the answers to the questions: To what extent do you feel concerned about water's quality in your village, air's quality in your village. The index takes values from 1 to 5. A values of 1 means that the respondent is not at all concerned about the environment pollution, while 5 means that the respondent is very concerned
<b>Income per household's member</b>	Income households per number of household's residents in December 2004.
<b>Total land exploit by the household</b>	Represents a sum of total agricultural land exploited by the household not depending on the ownership's status of the land (in property or in leasing)
<b>Number of ecological friendly agricultural practices</b>	Number of environmental friendly agricultural practices used by household in 2004. The values varies from 0 to 7, 0 meaning that no such practices were used in 2004 by the households, while 7 meaning that the households has used all the practices in 2004.

**Table A1 2 Mean number of environmental friendly agricultural practices used by the household by education**

	Number of environmental friendly agricultural practices used by the household
without school	<b>0,85</b>
primary (1- 4 grade)	1,40
secondary (5 - 8 grade)	1,52
complementary school	1,29
first part of high school (9 - 10 grade)	1,00
professional school	1,77
high school (9 – 12 grade)	<b>2,07</b>
post-high school education	1,83
foreman school	1,50
higher education – lower level (college)	<b>4,00</b>
university degree	1,86
postgraduate studies	1,56

Reading tip: the grey cells from the table indicate a statistically significant difference among people with different level of education. The significance of difference was tested using Oneway ANOVA and it is significant for  $p < 0.001$  for F test.

**Table A1 3 Percent of people considering useful the establishment of a public service for collecting garbage by commune**

	Very much	Much	Not so much	Not at all	Total
Ciocanesti	<b>41</b>	15	29	15	100
Cuza Voda	24	21	32	24	100
Gradistea	12	18	32	38	100
Independenta	17	25	22	37	100
Al Odobescu	<b>43</b>	25	14	17	100
Valcele		7	<b>61</b>	32	100
Vlad Tepes	6	10	23	<b>62</b>	100

Reading tip: the grey cells from the table indicate a statistically significant difference between communes. The significance of difference was tested using  $\chi^2$  test and is significant for a  $p < 0,001$

## ANNEX 2. RESEARCH INSTRUMENTS

### Questionnaire for households

Questionnaire for households:  
**Environmental friendly agricultural practices**  
JANUARY 2005

Hello!

I am [THE NAME OF THE INTERVIEW OPERATOR] and I come from the research Institute for Quality of Life. At the World Bank request, RIQL initiated a public opinion survey, among Romanian farmers from Călărași country, trying to find out which are their problems and concerns. For this purposes we have selected 500 households, including yours. I will ask you several questions, included in a questionnaire which lasts about 20 minutes. Thank you!

#### AGRICULTURAL PRACTICES

**v1. In your opinion, which type of agriculture is specific to your household?**

traditional, as the parents did

modern, with modern means

mixed

Our household does not practice the agriculture

98. DK

99. NA

**v2. Which type of agriculture do you think that is the best:**

traditional, as the parents did

modern, with modern means

mixed

98. DK

99. NA

**In which of the following activities your household is involved [was performed in the last 12 months], through the effective work of the household's members:**

	NO	Yes, only for <i>own</i> <i>consumption</i>	Yes, <i>for</i> <i>selling</i> too	DK	NA	Which surface (ha)
<b>v3. cultivating the soil (cereals, corn etc)</b>	0	1	2	98	99	
<b>v4. vegetable growing</b>	0	1	2	98	99	
<b>v5. technical/industrial crop (sunflower, cotton, tobacco, soy etc.)</b>	0	1	2	98	99	
<b>v6. Fruit growing</b>	0	1	2	98	99	
<b>v7. vineyard</b>	0	1	2	98	99	

**v8. Which of the following are present in your household: [MULTIPLE ANSWER]:**

- |                             |                            |
|-----------------------------|----------------------------|
| 1. tractor                  | 6. camion                  |
| 2. sowing machine           | 7. trail                   |
| 3. electric milking machine | 8. combine harvester       |
| 4. greenhouse               | 9. boat                    |
| 5. cart                     | 10. others (which?: _____) |

98. DK

99. NA

[Only for those who have greenhouse]

**SERA. Does your greenhouse have basin for collecting the residual water?**

1. Yes      2. No      99. DK      97. Nap

**How much land do you have (suitable for agriculture):**

**v9. owned and used by the household: \_\_\_\_\_ ha**

**v10. lease to agricultural “associations” (and worked by the association): \_\_\_\_\_ ha**

Livestock in the household?	Number	998. DK 999. NA	0 – none	Number
SEP1. Cows.		SEP3. Sheep		
SEP2. Pigs		SEP4. Poultry		
SEP5. Horses		SEP6. beehives		

**AUTGL. In every society some people are considering themselves rich, while others are considering themselves poor. If you would to give you a mark, from 1 to 10, like in school, where 1 means very poor and 10 very rich, what mark it would be?**

1	2	3	4	5	6	7	8	9	10	98. DN
										99.NA
<i>poor</i>										<i>rich</i>

**In the following years, you intend:**

	I have begun to do it	Yes	No	I am not decide	NA
v11. to buy agricultural land	1	2	3	98	99
v12. to buy livestock	1	2	3	98	99
v13. to borrow money for agricultural activities	1	2	3	98	99
v14. to stop agricultural activity	1	2	3	98	99
v15. to set up an agricultural company	1	2	3	98	99
v16. to set up a non-agricultural company	1	2	3	98	99

## ENVIRONMENTAL FRIENDLY AGRICULTURAL PRACTICES

*[Just for those who cultivate the land. For the others go to Sources of information]*

If you are thinking to the way in which you used to practice the agriculture in **2000**, which of the following did you use?

	Yes	No	DK	NAP
<b>AGRO1.</b> Did you practice the crop rotation periodically changing the cereals with vegetables (beans, soy, pease) or with technical crop on the same plot of land	1	0	99	97
<b>AGRO2.</b> Did you use chemical fertilizers asking to a specialist about the quantity of the fertilizers	1	0	99	97
<b>AGRO3.</b> Did you use organic fertilizers (compost)	1	0	99	97
<b>AGRO4.</b> Did you use organic materials against crop diseases	1	0	99	97
<b>AGRO5.</b> Did you use pesticides against crop diseases asking to a specialist about the quantity and the quality of the pesticides	1	0	99	97
<b>AGRO6.</b> Did you use selected seeds	1	0	99	97
<b>AGRO7.</b> Did you use soil testing	1	0	99	97

If you are thinking to the way in which you used to practice the agriculture in **2004**, which of the following did you use?

	Yes	No	If yes, which surface (ha)?	DK	NAp
<b>AGRO8.</b> Did you practice the crop rotation periodically changing the cereals with vegetables (beans, soy, pease) or with technical crop on the same plot of land	1	0		99	97
<b>AGRO9.</b> Did you use chemical fertilizers asking to a specialist about the quantity of the fertilizers	1	0		99	97
<b>AGRO10.</b> Did you use organic fertilizers (compost)	1	0		99	97
<b>AGRO11.</b> Did you use organic materials against crop diseases	1	0		99	97
<b>AGRO12.</b> Did you use pesticides against crop diseases asking to a specialist about the quantity and the quality of the pesticides	1	0		99	97
<b>AGRO13.</b> Did you use selected seeds	1	0		99	97
<b>AGRO14.</b> Did you use soil testing	1	0		99	97
<b>AGRO15.</b> Did you use natural windbreaks	1	0		99	97

**[If the answer to AGRO12 is YES, otherwise got o AGRO18]**

**AGRO16. When you are using pesticides...**

1. do you use to buy yourself and crop dusting with your own machines or  
2. do you ask to authorized firms to crop dusting your land  
99. NA/ DN 97. NAp

**AGRO17. From where do you usually buy pesticides?**

from authorized firms	2. occasional	3. from the market	99.NA/DN	97. NAp
-----------------------	---------------	--------------------	----------	---------

**AGRO18. From where do you buy the seeds for the agricultural activities?**

1. from authorized firms
  2. from others producers (agricultural associations, individual producers)
  3. from own production
  4. other sources. Which one? \_\_\_\_\_
99. NA/DN                      97. NAp

**SOURCES OF INFORMATION****S1. Where do you find information about the agricultural activities? (MULTIPLE ANSWER)**

1. agricultural engineer
  2. TV, radio
  3. *Ecological Agriculture* review
  4. newspapers, magazine
  5. friends, relatives, neighbors
  6. Townhall
  7. agricultural associations
  8. firms which have agricultural activities
  9. agricultural consultants
  10. others. Which? \_\_\_\_\_
98. DK              99.NA

**S2. From the sources mentioned above, which one is the most important source of information for you? \_\_\_\_\_****S3. You can learn the best way to practice agriculture from:**

- books, magazines  
 parents  
 agricultural engineer  
 friends, relatives, neighbors  
 TV, radio  
 others. Which ones? \_\_\_\_\_
98. DK              99.NA

**ENVIRONMENT PROTECTION**

To what extent do you feel concerned about:	Very much	Much	Not so much	Not at all	NA/DK
Water's quality in your village.	4	3	2	1	99
Air's quality in your village	4	3	2	1	99

**How do you appreciate the water's quality in your village?**

very good	good	bad	Very bad	DK	NA
4	3	2	1	98	99

**Do you have in your household?**

well	1. Yes	0. No	99. NA
running water	1. Yes	0. No	99. NA
bathroom	1. Yes	0. No	99. NA
WC in house	1. Yes	0. No	99. NA
Latrine (WC outside your house)	1. Yes	0. No	99. NA

[If the answer to ECO8 is Yes, if no go to **ECO13**...]

**How deep is your latrine?** \_\_\_\_\_ m

**How is it built the hole of your latrine?**

1. dig in the ground
2. dig with the lateral wall made by concrete
3. septic tank
4. other. How? \_\_\_\_\_
99. DK/NA

**ECO11. Which is the most important think taking into account when you are choosing the place for the latrine?**

1. to be far from the house
1. to be far from barn
2. to be on the flat ground
3. to be far from well
4. to be in the backyard
5. other. How? \_\_\_\_\_
99. DK/NA

**ECO12. How far from the latrine is located the nearest well?** \_\_\_\_\_ m

**ECO13. How deep is the well used by your household?** \_\_\_\_\_ m

**Do you have in your household?**

**ECO14.** A platform for organic garbage and manure 1 Yes 0. No 99. NA

**ECO15.** A rubbish cart 1 Yes 0. No 99. NA

**ECO16. To what extent do you consider that the platform for organic garbage and manure is useful?**

Very much	Much	Not so much	Not at all	DN	NA
4	3	2	1	98	99

**ECO17. Do you afford to pay for building a garbage and manure platform [if you would not have one]?** 1. Yes 2. No 99. DK/NA

[If the answer to ECO17 is Yes]

**ECO18. Which amount of money do you afford to pay for building the platform?** \_\_\_\_\_

lei 97. NAp 99. DK/NA.

**[For those who have individual platform, if NO go to ECO21]**

**ECO19. When your platform was built?** \_\_\_\_\_year 99. DK/NA 97. NAp

**ECO20. Who built your platform for garbage and manure?**

1. Household's members without external help
2. Household's members with local authorities and World Bank's help
3. Local authorities with World Bank's help
99. DK/NA

**ECO21. When you throw the garbage:**

1. Do you use to separate the organic and non-organic garbage
2. Do you throw the all garbage together, not depending on the content
3. We do not use to throw the garbage
99. DK /NA

**ECO22. Where do you use to throw the organic garbage (food remains):**

1. to the individual platform
2. to the rubbish cart
3. in a hole made in the yard or in the garden
4. somewhere in the yard or in the garden
5. other. Where? \_\_\_\_\_
6. We do not use to throw the garbage
99. DK /NA

**ECO23. Where do you use to throw the non-organic garbage (glass, iron, plastic):**

1. to the individual platform
2. to the rubbish cart
3. in a hole made in the yard or in the garden
4. somewhere in the yard or in the garden
5. We do not use to throw the garbage
6. other. Where? \_\_\_\_\_
99. DK/ NA

**[For those who have livestock in the household, others go to ECO26]**

**ECO24. Where do you deposit the manure?**

1. to the individual platform
2. to the rubbish cart
3. in a hole made in the yard or in the garden
4. somewhere in the yard or in the garden
5. other. Where? \_\_\_\_\_
6. We do not use to throw the garbage
99. DK / NA 97. NAp

**ECO25. How far from the nearest well do you deposit the manure?** \_\_\_\_\_ m 97. Nap 99. NA

**ECO26. What are you usually doing when you have too much garbage in your yard?**

1. I am transporting it to the village's garbage platform
2. I am transporting it on the field
3. I am depositing it on the road, in front of the yard
4. other. What else? \_\_\_\_\_
5. We do not use to throw the garbage
99. DK/NA

**ECO27. How often do you use to transport the organic garbage (food remains and manure) to the village's garbage platform?** \_\_\_\_\_ months      99. DK/NA    97. NAp

**ECO28. How often do you use to transport the non-organic garbage (glass, iron, plastic) to the village's garbage platform?** \_\_\_\_\_ months      99. DK/NA    97. NAp

**ECO29. To what extent do you believe that the establishment of a communal service for garbage collection would be useful for your commune?**

Very much    Much    Not so much    Not at all    DK    NA  
4                3                2                1                98    99

### Modulul IMPACT

**PBM1. Did you hear about a World Bank project in the area which aims to improve the agricultural activity and to protect the environment?**

1. Yes                2. No                99. DN/NA

*[If the answer is NO go to FACTUAL DATA]*

*If the answer to PBM1 is YES:*

**PBM2. Did you hear which the main goal of the project is?**

1. Yes                2. No                99. DN/ NA        97 NAp

*If the answer is NO go to FACTUAL DATA]*

*If the answer to PBM2 is YES:*

**In your opinion, how the project has influenced the following:**

	They improved it	They did not change it	They worse it	DK	NA	NAp
<b>IMP1. Your life.</b>	1	2	3	98	99	97
<b>IMP2. Village's people life</b>	1	2	3	98	99	97

**To what extent do you consider that the following actors have helped to the project's implementation?**

	Very much	Much	Not so much	Not at all	DK	NA	NAp
<b>IMP3. Local authorities (townhall)</b>	1	2	3	4	98	99	97
<b>IMP4. Village's people</b>	1	2	3	4	98	99	97

**IMP5. In your opinion, who was the main actor in the project's implementation?**

1. The townhall
  2. The World Bank
  3. The County Council
  4. The village's people
  5. Others. Who else? \_\_\_\_\_
99. DK/NA                      97. NAp

**IMP6. In your opinion, who else should be involved in the project's implementation?**

99. DK/NA                      97. NAp

**IMP7. In your opinion, who was the main beneficiary of the project?**

99. DK/NA                      97. NAp

<b>PBM3 In which of the following situations have you been during the last years?</b>	<b>Yes</b>	<b>No</b>	<b>I did not know about them</b>	<b>NA</b>	<b>NAp</b>
1. I have participated in courses for farmers about environmental friendly agricultural practices	1	0	98	99	97
2. I have visited experimental lot prepared using environmental friendly agricultural practices	1	0	98	99	97
3. I have read in <i>Ecological Agriculture</i> about environmental friendly agricultural practices	1	0		99	97
4. I have received brochures, books about environmental friendly agricultural practices	1	0	98	99	97
5. I have received advice, consultancy from specialized person about environmental friendly agricultural practices	1	0	98	99	97

*[If the answer is yes for at least one of the questions PBM3, if no got o FACTUAL DATA]*

**IMP8. To what extent do you consider useful the information transmitted by these actions (courses, experimental lots, brochures, reviews, consultancy)?**

Very much    Much    Not so much    Not at all    DK    NA    NAp  
4                      3                      2                      1                      98    99    97

**IMP9. To what extent do you use the information transmitted by these actions (courses, experimental lots, brochures, reviews, consultancy) in you agricultural activity?**

Very much    Much    Not so much    Not at all    DK    NA    NAp  
4                      3                      2                      1                      98    99    97

**IMP10. How do you think that these activities have influenced you agricultural activities?**

It increased                      It rest the same                      It decreased                      DK                      NA                      NAp  
3    2    1    98                      99                      97

<b>Modulul DATE FACTUALE</b>
------------------------------

**Does your dwelling have access to ...?**

GAZ	Methane gas	1 Yes	0. No	99. NA
ELE	Electricity	1 Yes	0. No	99. NA

Does your household have a ...?		DA	NU	NA
AUTO	car	1	0	99
TEL	telephone	1	0	99
TELEMOB	mobile telephone	1	0	99
FRIG	freezer	1	0	99
MSPAL	washing machine	1	0	99
ASPIR	vacuum cleaner	1	0	99
APRC	cable / parabolic antenna	1	0	99
TVC	color TV	1	0	99
TVAN	white - black TV	1	0	99
RADIO	radio	1	0	99
PC	computer	1	0	99
CONT	bank account	1	0	99

**SEX. Sex** 1. Male 2. Female

**AGE. Age:** \_\_\_\_\_ years

**EDUC. What is the highest level you have reached in your education?**

- |  |   |
|--|---|
| <b>1.</b> without school<br><b>2.</b> primary (1- 4 grade)<br><b>3.</b> secondary (5 - 8 grade)<br><b>4.</b> complementary school<br><b>5.</b> first part of high school (9 - 10 grade)<br><b>6.</b> professional school<br><b>7.</b> high school (9 – 12 grade) | <b>8.</b> post-high school education<br><b>9.</b> foreman school<br><b>10.</b> higher education – lower level (college)<br><b>11.</b> university degree<br><b>12.</b> postgraduate studies<br><b>99.</b> NA |
|--|---|

**OCUP. Which is you present status: [MULTIPLE ANSWER]**

1. pupil / student
2. housekeeper
3. registered unemployed
4. unregistered unemployed (he / she does not receive unemployment benefits and is searching for employment)
5. retired
6. unable to work
7. works with legal contract or authorization
8. self-employed (including the agricultural farmers)
9. employer
10. daily worker or employed without contract
11. satisfying military service
99. NA

**NRMEM.** How many people are living in your household.?: \_\_\_\_\_

**MEM1.** Under 16 years old \_\_\_\_\_? **MEM2.** over 16 years old \_\_\_\_\_

**VENDEC.** Taking in account all the incomes sources of your household, please tell me which is the total amount of money earned by all members of your household last month (December)?

\_\_\_\_\_ millions lei 98. DK 99. NA

**VAGMAI.** Can you tell me please, what amount of money do you earn last month from selling agricultural products?

\_\_\_\_\_ millions lei 98. DK 99. NA

**VENT04.** Last year (2004), the total income of your households was:

\_\_\_\_\_ millions lei. 98. DK 99. NA

**Thank you!**

**FIELDWORK OPERATOR will fill the answers for the questions below.**

COMMUNE: \_\_\_\_\_ (name) VILLAGE \_\_\_\_\_

COMMUNE CODE (SIRSUP) [ ][ ][ ][ ][ ][ ][ ][ ] VILLAGE CODE (SIRINF) [ ][ ][ ][ ][ ][ ][ ][ ]

**DUR.** Duration of interview (minutes) \_\_\_\_\_ **ZI.** The day of interview \_\_\_\_\_

**EVAL.** In your opinion the  
subject was ...

Interested by all the questions	1
Interested by all some questions	2
Not at all interested	3

## Questionnaire for agricultural companies

In which of the following activities was your company involved in the last 12 months:

	NO	Yes	DK	NA	Which surface (ha)
<b>v1. cultivating the soil (cereals, corn etc)</b>	0	1	98	99	
<b>v2. vegetable growing</b>	0	1	98	99	
<b>v3. technical/industrial crop (sunflower, cotton, tobacco, soy etc.)</b>	0	1	98	99	
<b>v4. Fruit growing</b>	0	1	98	99	
<b>v5. vineyard</b>	0	1	98	99	

If you are thinking to the way in which you used to practice the agriculture in **2000**, which of the following did you use?

	Yes	No	DK	NAp
<b>AGRO1.</b> Did you practice the crop rotation periodically changing the cereals with vegetables (beans, soy, pease) or with technical crop on the same plot of land	1	0	99	97
<b>AGRO2.</b> Did you use chemical fertilizers asking to a specialist about the quantity of the fertilizers	1	0	99	97
<b>AGRO3.</b> Did you use organic fertilizers (compost)	1	0	99	97
<b>AGRO4.</b> Did you use organic materials against crop diseases	1	0	99	97
<b>AGRO5.</b> Did you use pesticides against crop diseases asking to a specialist about the quantity and the quality of the pesticides	1	0	99	97
<b>AGRO6.</b> Did you use selected seeds	1	0	99	97
<b>AGRO7.</b> Did you use soil testing	1	0	99	97
<b>AGRO8.</b> Did you use natural windbreaks	1	0	99	97

If you are thinking to the way in which you used to practice the agriculture in **2004**, which of the following did you use?

	Yes	No	If yes, which surface (ha)?	DK	NAp
<b>AGRO9.</b> Did you practice the crop rotation periodically changing the cereals with vegetables (beans, soy, pease) or with technical crop on the same plot of land	1	0		99	97
<b>AGRO10.</b> Did you use chemical fertilizers asking to a specialist about the quantity of the fertilizers	1	0		99	97
<b>AGRO11.</b> Did you use organic fertilizers (compost)	1	0		99	97
<b>AGRO12.</b> Did you use organic materials against crop diseases	1	0		99	97
<b>AGRO13.</b> Did you use pesticides against crop diseases asking to a specialist about the quantity and the quality of the pesticides	1	0		99	97
<b>AGRO14.</b> Did you use selected seeds	1	0		99	97
<b>AGRO15.</b> Did you use soil testing	1	0		99	97
<b>AGRO16.</b> Did you use natural windbreaks	1	0		99	97

## Interview guides

### **Interview guide for managers of agricultural associations**

General information on association

Name, locality

Activity profile

Type of association (size, no of employees, no of members, qualification, management)

History of firm activity

Activities: crops, means

#### ***For associations that took part in the project***

History of project implementation: where did they get the information about the project, in which way it was implemented, did they have difficulties in implementation, if yes, what exactly?

Which activities included the project?

In which activities they were involved: training, seminars, receiving brochures? Who organized these activities?

In which way they cooperated with local authorities? How do they consider the involvement of local authorities in the process of implementation?

Which institutions/persons were most involved in implementation? Who else should participate in order to secure the success of the project?

Agricultural activity: In which way the implementation of the project influenced the following:

	2004	2000
Type of crop, land cultivated		
Rotation of crops		
Type of fertilizers		
Pesticides used		

Do they have a warehouse for pesticides?

Where do they purchase the pesticides?

How do they use them, with special machinery or not?

Do they speared them irrespective of the weather or they take into consideration the wind, the rain etc?

Are they concerned with combating soil erosion? In which way?

Are they concerned with the depth of ..? What is the depth?

Do they test the soil? How?

What do they think about ecological agriculture? Is this a a good way of doing agriculture, is it appropriate for their activity, which is in their opinion the future of this type of agriculture?

Overall, how do they consider that implementation of the project influenced (changed) the following:

- The way in which the association was undertaking its activity in 2000
- Management of the association
- Relationship between association and its members
- Productivity
- Life of the people in the community

Other associations were interested in the project, did they asked about it, they tried replication, if yes, who exactly?

Which is in their opinion the future of this project; to what extent can it be implemented on a larger scale?

***For association who didn't take part in the project***

Have they heard about the existence of the project? If yes, where?

Do they know exactly what the project comprises?

If yes, what do they think about it, is it good, is it appropriate for the area etc?

Are they interested in replication of the project to their own activity?

During the past 4 years, did they take part in training courses, seminars, they received brochures for farmers? If yes, who organized these activities?

Did they have experimental lots in the past 4 years?

Agricultural activity

Type of crop, land cultivated	
Rotation of crops	
Type of fertilizers	
Pesticides used	

Do they have a warehouse for pesticides?

Where do they purchase the pesticides?

How do they use them, with special machinery or not?

Do they speared them irrespective of the weather or they take into consideration the wind, the rain etc?

Are they concerned with combating soil erosion? In which way?

Are they concerned with the depth of ..? What is the depth?

Do they test the soil? How?

Did they plant trees during the past 4 years on association field through their own effort? What about the members of the association?

Do they test the soil? How?

What do they think about ecological agriculture? Is this a good way of doing agriculture, is it appropriate for their activity, which is in their opinion the future of this type of agriculture?

### **Interview guide for Mayor (legal adviser)/agricultural consultant**

History of project implementation in the community:

- When it was implemented, in how many households, which were the criteria for selection, in how many associations?
- What was the role of the town hall in the process of implementation?
- Local authorities, did they take part in training, in informing activities?
- Were the informing activities efficient, were people informed accurately?
- Were there difficulties about the project if yes, which exactly?
- How was the project received in the commune, how did people and associations react?
- How do they consider people answered to the rules of the project, do they respect the norms of sorting the garbage? Are the individual and common platforms useful?
- Which is the land surface which is cultivated by using ecological practices?

How do they consider that the project influenced (changed) the following:

- o The general mode of doing agriculture
- o Relationship of the town hall with associations, with local residents
- o Health state of the people in the community
- o Life of the people in the community

Who benefited most from the project?

People or authorities from other localities, were they interested in the project, did they ask about it, did they try replication, if yes who exactly?

Which is in their opinion the future of this project, to what extent they think it can be applied on a larger scale?

Do they have other plans for the future in the same area?

Are they concerned about the depth of cut in the soil? If yes, in which way?

Did they plant trees through town hall effort in the past 4 years? If yes, how many?

Is there a system for collecting the garbage? If no, are there any plans for creating such a system?

What do they think about ecological agriculture, which are the advantages of their way of doing agriculture?

Which are in their opinion the commune's priorities in the field of agriculture for the future?

**Interview guide for doctor**

Information about the project:

- Does he know about its existence? If yes where did they hear?
- Do they consider that implementation of the project influenced the health state of the population? In which way? What more should they do in order to improve the health of the population?

Do they have information about the quality of the water in the commune? What exactly is the quality of water? Did it change during the past 4 years?

## Commune profile

### A. socio-demographic data

1. total population	
2. distribution on sex, age	
3. fertility rate	
4. mortality rate	
5. infant mortality rate	
6. divorce rate	
7. marriage rate	

### B. infrastructure

1. total land	
2. agricultural land, out of which arable land	
3. agricultural equipment tractors combine harvesters cultivators trailers machinery for spreading pesticide carts	

### C.1. economic data: agricultural activities and organizations: short description

<b>1. cropping pattern 2004 :</b>	surfaces	productions
<b>individual farmers</b> Cereals Technical crop Vegetables Fruits Vinery		

<b>2. types of cultures 2004 :</b>	surfaces	productions
<b>associations</b> Cereals Technical crop Vegetables Fruits Vinery		

<b>3. livestock</b> poultry pigs sheep cows horses	
4. agricultural associations	
5. agricultural consultancy agencies	

C.2. other economic activities: short description

D. data on population health

No of cases

	2000	2004
<b>Diarrhea</b>		
<b>Blue disease</b>		
<b>Tuberculosis</b>		
<b>Skin diseases</b>		
<b>Hepatitis</b>		

**Data sources:** census, local documents, local authorities, medical records.

### **ANNEX 3. LIST WITH INTERVIEWEES (QUALITATIVE STUDIES)**

#### **Local representatives**

Mayor Vâlcele

Mayor Ciocănești

Vice-mayor, Al Odobescu

Secretary of the Townhall, Al Odobescu

Mayor Grădiștea

Mayor Vlad Țepeș

Townhall's employee in charge with Agricultural Register, Vlad Țepeș

Secretary of the Townhall, Cuza Vodă

Vice-mayor, Independența

#### **Agricultural Engineers**

Agricultural Engineer Vâlcele

Agricultural Engineer Ciocănești

Agricultural Engineer, Al Odobescu

Agricultural Engineer of OJCA, Al Odobescu

Agricultural Engineer Grădiștea

Agricultural Engineer, Cuza Vodă

Agricultural Engineer, Independența

#### **Medical stuff**

Doctor Vâlcele

Doctor Ciocănești

Doctor Al Odobescu

Nurse Al Odobescu

Doctor Grădiștea

Doctor Vlad Țepeș

Nurse Vlad Țepeș

Doctor, Cuza Vodă

Doctor, Independența

#### **Managers of the agricultural companies**

S.C. Ildu SRL - Vâlcele

S.C. Deni Agro SRL., Vâlcele

SC Mihuț SRL, Vâlcele  
SC Ilya Agromec, Vâlcele  
AF Dan Deculescu, Ciocănești  
SC „Crinul” SRL, Ciocănești  
SC Flora SRL Ciocănești  
P.F.Eliana, Al Odobescu  
SC Elia SRL, Al Odobescu  
P.F. Dragnea Valter, Al Odobescu  
S.C. Rom-Can SRL, Al Odobescu  
S.C. Agras SRL, Grădiștea  
SC AGRIROM Grădiștea SRL, Grădiștea  
SA GRASICA, Grădiștea  
AF Iliuta Marian, Vlad Țepeș  
AF Mihalache Marian, Vlad Țepeș  
AF Gavril Marian, Vlad Țepeș  
S.C.AGROSAB srl, Vlad Țepeș  
AF Toma Ghorghe, Cuza Vodă  
S.C. Flacăra Ceacu, Cuza Vodă  
S.C. Agromixt, Cuza Vodă  
S.C. Mecanizarea Ceacu, Cuza Vodă  
S.C. Unirea Ceacu, Cuza Vodă  
S.C.Victoria, Cuza Vodă  
S.C. Agrozootehnica, Independența