

European Commission,  
Directorate General XIII,  
Information Society:  
Telecommunications,  
Markets, Technologies –  
Innovation and  
Exploitation of Research

**CAPE Project**  
(TR 4101/ IN 4101)



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# **SURVEY ON TELEMATICS APPLICATIONS IN CENTRAL EUROPEAN COUNTRIES**

## **DELIVERABLE D 2.4 PART 2: ENVIRONMENT**

**March 1999**

**CAPE Project  
(TR 4101/IN 4101)**

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CENTRAL EUROPEAN COUNTRIES**

**DELIVERABLE D 2.4  
PART 2: ENVIRONMENT**

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## EXECUTIVE SUMMARY

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This survey was conducted in the context of the CAPE project. CAPE (Co-ordinated Action for Pan – European Transport and Environment Telematics Implementation Support) is a European Union (EU) funded project that aims to encourage the greater use of telematics technologies in Western, Central and Eastern Europe.

A key objective of the CAPE project is to survey the needs and priorities among CEE and EU local and regional authorities for transport and environment telematics solutions.

Within Work Package 2 “Analysis of Status and Framework of Telematics Implementation” of the CAPE project a qualitative survey of the organisational, technical and legal frameworks for transport and environment telematics among local authorities has been developed for ten EU accession countries (Country Reports).

In addition to that three quantitative (questionnaire) surveys of the status and priorities for telematics solutions in CEE and the EU were realised:

- Survey on Transport Telematics Applications in CEEC
- Survey on Environment Telematics Applications in CEEC
- Survey on Environment Telematics Applications in EU

This survey has focused on the analysis of the current status and future priorities of Environment Telematics use in authorities from ten Central and Eastern European countries. The results of the survey are based on a questionnaire which was sent in 10 languages to 556 local and regional authorities in Central and Eastern Europe. The mailing was based on a genuinely researched and representative database of decision-makers.

### **Methodology and representativeness**

The questionnaire was answered by 147 authorities (26%). In general the survey sample can be regarded as representative. With respect to the total population size of the CEE countries, only Latvia and Poland seem to be slightly underrepresented. In some countries (Czech Republic, Latvia and Estonia) larger authorities of more than 200.000 inhabitants are under-represented. The vast majority of the questionnaires were returned by local authorities, only 4% of the questionnaires were answered by regional authorities.

For the survey the overall results are presented and wherever any deviations from that overall pattern were observed in any of the basic sub-sets of the sample, these are separately reported for:

- geographic segments: Central Europe (Poland, Czech Republic, Slovak Republic, Hungary), South-East Europe (Bulgaria, Romania, Slovenia) and Baltic States (Lithuania, Latvia, Estonia)
- Authority size segments: the first segment includes authorities with not more than 50.000 inhabitants and the second authorities between 50.000 and 200.000 inhabitants. The third segment comprises large authorities over 200.000 inhabitants
- 1<sup>st</sup> wave and 2<sup>nd</sup> wave accession countries.

### **Factual information on the environment**

The environmental situation in CEEC authorities is characterised by the following facts:

- 12% of the authorities had some critical air quality levels breached in the last 12 months, according to their national laws.
- Compared to EU authorities, the level of filtering installations among main polluters is low. Only 19% of the CEEC authorities answered that almost all plants have filtering installations.
- Only about 20% of the CEEC authorities claimed that almost all households are connected to a sewage system. In EU authorities this is true for every second authority.
- The annual growth rates of domestic waste in accession countries are high (8%). In South-East Europe and in large authorities the growth rates are even higher (10%).
- Compared to EU countries, the proportion of recycled and incinerated waste are still very small. On average, only 2% of the domestic waste is incinerated and 3% is recycled. However the levels of recycled and incinerated waste vary considerably within the CEEC.

### **Key environmental problems**

According to the survey, the most important environmental problems are undoubtedly to be found in the area of waste management, followed by waste water management and air pollution.

The most pressing problems at short-term for CEEC authorities are quite similar to the EU. Again waste related problems were mentioned most often. Not only the increasing levels of domestic waste, but also the problems of illegal waste dumping, the disposal of hazardous waste and the treatment of sludge from waste water plants are considered to be acute problems at short term. Traffic emissions and noise pollution are most commonly identified as very important long-term problems. In particular in “Central Europe” as well as in larger authorities these problems are significant. Not only CEEC authorities, but also authorities from the EU believe that traffic related problems can only be solved by means of a long-term strategic approach.

### **Environmental policies**

In many environment related areas the level of political action in CEEC authorities is fairly low. Environmental policies are mainly implemented in the areas of sewage treatment, waste reduction and waste recycling. Policies for the reduction of traffic emissions and for the remedy of contaminated land sites is in operation in less than one third of the authorities. With regard to environmental policies, first wave accession countries are generally more advanced than second wave countries, which is mainly due to their obligation to adopt environmental policies and standards close to those of the European Community. However, many authorities have the intention to develop environmental policies. For areas like “reduction of traffic emissions”, “support of waste recycling” and “promotion of waste reduction” about 40% of the authorities would like to develop policy strategies in the next years.

Although the level of environmental policy is often not very high, the majority of the respondents think that the achievements of their environmental policy are positive. About two third of the decision-makers stated that their environmental policy has either been successful in improving environmental conditions or has made some progresses.

### **Impact of telematics on areas of environmental policy**

In comparison to EU authorities, environmental decision-makers in the CEEC are more optimistic on the problem solving capacity of telematics solutions. The percentages of authorities that see significant impacts of telematics is higher in CEEC. Areas with highest impact of telematics are in principle similar in



EU authorities and CEEC authorities. The highest impact of telematics applications is expected to be in the following areas:

- improving the decision making process,
- improving internal education and training opportunities,
- enhancing public awareness of environmental issues.

The problem-solving capacity of telematics is considered to be fairly limited in areas, such as “reducing noise pollution”, “reducing negative effects of transport” and “preventing soil pollution”. However, the potential of telematics systems to contribute in solving the most important problems is seen very differently. While the significance of telematics for solving long-term problems (noise pollution, traffic emissions) seems to be very low, 45% of authorities believe that telematics can help to improve waste management, which is identified to be the most important environmental problem at short term.

In CEEC authorities there is a need for obtaining more detailed information on the use of modern technologies in the area of the environment. One quarter of the authorities stated that they only know some basic concepts of environmental technology and 14% of the respondents mentioned that they have too little knowledge or no knowledge at all. The highest demand seems to be in small authorities, where the level of expertise is below average.

### **Benefits and obstacles**

With regard to the benefits of telematics use, no clear trend emerges in CEEC. However, “improved planning and decision making” and “improved internal communication/work flow are those benefits, which are mentioned most often in CEEC authorities.

Like in the EU, CEEC authorities consider insufficient public funding to be the by far most important obstacle for a better telematics uptake in the environment field. The difficulty in supplying up-to-date and relevant information is another key obstacle for both, CEEC and EU authorities. Other important obstacles are seen in a lack of institutional co-operation, legal problems and lack of qualified staff.

### **Internal use of telematics systems**

The availability of environmental data often seems to be unsatisfactory and therefore hinders the implementation of telematics technologies. In particular, data concerning “traffic noise”, “non-point sources of pollution”, “ traffic flows”, “hazardous waste deposits” and “energy consumption” is often unavailable. In general the availability of environmental data is much better in larger authorities. The ranking of priorities of future data acquisition is in line with the most pressing problems. Authorities primarily want to focus their efforts on improving the provision of environmental data on air pollution and hazardous waste deposits.

In comparison to EU authorities, the use of information technology to handle and analyse environmental data is considerably limited. Modern technologies are in general only available in about 10-20% of the authorities in the CEEC. However, many authorities are about to implement these technologies or are planning to promote them in the future. The future demand for technologies to support data handling and analysing is very high. Around 70% of the authorities want to improve the use and the integration of electronic databases for example.

The use of telematics applications in the environment field is extremely limited, compared to EU authorities. However, an increasing number of authorities are already partly implementing telematics-like technologies. The “full use” of such technologies can mostly be found in the area of waste management and in ground water monitoring<sup>1</sup>. The application of telematics is generally more developed in large

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<sup>1</sup> These statements are based on personal perceptions of the respondents.

authorities, as is the interest for its more intensive use in the future. There is a clear will to intensify the implementation of telematics.

More than 70% of the authorities would like to use telematics for “Supporting waste management”. Other high priorities for telematics applications are:

- Decision support systems (41%)
- Modelling of ambient air quality (40%)
- Air quality forecasts (39%).

The general interest of implementing new environment telematics applications seems to be much higher in CEEC, since the percentages of CEEC authorities mentioning future priorities are far above those of EU authorities.

As regards basic technologies, more than 40% of the authorities have Internet access and use e-mail systems<sup>2</sup>. Technologies like GIS and aerial photography are used by less than 10%. Although the current use of Geographic Information Systems and analysis of aerial photographs is not very widespread, the demand for these technologies will be high in the coming years. E-mail and Internet are also likely to be used more intensively in the future.

### **Delivery of information and public services**

The current provision of information is fairly high, in particular relating to areas like “environmental awareness”, “waste reduction”, “drinking water quality”. However there is no data available as to the quality of this information. Authorities intend to improve information dissemination especially in areas, like “Air quality forecasting”, “Waste reduction” and “General awareness raising”.

The most common technical platforms for the delivery of environment related information are the local press, radio and TV. Half of the authorities claimed to supply environment related information by telephone/fax and 20% by e-mail or Internet. The right to request electronic data on environmental topics was deemed possible in 43% of the authorities. However, the real use of this possibility is probably much lower. In only 9% of the authorities, citizens can use basic interactive services (like making suggestions to the public administration or participating in planning processes) via e-mail or Internet.

### **Sources of funding**

The most common sources of funding for implementing new technologies in the past are the authority’s own funds (91%), whereas 49% mentioned that their action of implementing information and communication technologies was financed by national or regional funds. Private sector contributions still seem to be a marginal source of funding, since only 12% of the authorities relied on private funding. EU funding (e.g. PHARE) was used in 9% of the cases.

### **Future interests**

The level of future interest in environment telematics applications is very high in CEEC authorities, even higher than in the EU. The following areas are attracting most interest:

- domestic waste management (97%)
- treatment of hazardous waste (77%)

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<sup>2</sup> The fact that 40% of the decision-makers responded that they have Internet access and use e-mail does not necessarily reflect the actual level of use, but only reflects the general availability of these technologies.

- environmentally friendly transport management (76%)

As regards telematics technologies, CEEC authorities have a very high interest in all items. CEEC authorities are mostly interested in:

- public environment information systems (90%)
- decision support systems (80%)
- data exchange (69%)
- metadata/data handling issues (67%)

In addition to telematics issues, CEEC authorities have a general interest in getting more information on “raising public awareness for the environment” and “environmental impact assessment”.

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## 1 INTRODUCTION

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### 1.1 CONTEXT OF THE REPORT

While considerable knowledge is available for transport telematics-related issues in the EU, for the area of environment telematics the empirical basis is unsatisfactory. For Central and Eastern European Countries (CEEC) no information on the current status and framework of telematics implementation is available so far.

CAPE (Co-ordinated Action for Pan –European Transport and Environment Telematics Implementation Support) is a European Union (EU) funded project that aims to encourage the greater use of telematics technologies in Western, Central and Eastern Europe. The project intends to generate a number of products that will serve both local governments across Europe, and help the European Commission increase the implementation of IT (information technology) solutions at the municipal and district level.

CAPE's goals are twofold:

First, the project aims to benefit local authorities in Central and Eastern Europe (CEE) and the EU by raising their awareness to telematics applications and facilitating their implementation at the local level.

In CEE, those public authorities who have an immediate need for applying efficient and low-cost telematics systems in the areas of transport and environment are being targeted, while in the EU, those who are for a large part not yet fully aware of the potentials of advanced environmental telematics for improving environmental management in their jurisdiction, will aim to be reached by CAPE.

Project results will be disseminated through:

- completion of a best practice inventory in environment and transport telematics
- conferences serving as dissemination events, and
- workshops that serve as an opportunity to exchange information and experiences and build networks between the EU and CEE.
- an Internet webpage which serves as part of the related dissemination activities ([www/rec.org/REC/Programs/Telematics/CAPE/CAPE.html](http://www/rec.org/REC/Programs/Telematics/CAPE/CAPE.html))

Secondly, CAPE will survey the needs and priorities among CEE and EU local and regional authorities for transport and environment telematics solutions and through this, encourage future involvement in the European Union's 5th Research and Technological Development (RTD) Framework Programme (FP).

Within Work Package 2 "Analysis of Status and Framework of Telematics Implementation" of the CAPE project three quantitative (questionnaire) surveys of the status and priorities for telematics solutions in CEE and the EU were realised:

- Survey on Transport Telematics Applications in CEEC
- Survey on Environment Telematics Applications in CEEC
- Survey on Environment Telematics Applications in EU

Complementing these surveys, a qualitative examination of the organisational, technical and legal frameworks for transport and environment telematics among local authorities and related policies and priorities has been conducted for each of the EU accession countries (Country Reports).

This report is one element of Work Package 2 and comprises the results of the survey analysis on Environment Telematics in Central and Eastern Europe. The survey on environment telematics is based on a questionnaire, which has been sent to local and regional authorities in ten different countries in CEEC.

## 1.2 METHODOLOGICAL BACKGROUND OF THE SURVEY<sup>3</sup>

For the mailing of the questionnaire on Environment Telematics in CEEC, the following data sources were used:

- Data researched systematically by consortium partners (Regional Environmental Centre, REC (Hungary), International Society for Environmental Protection, ISEP (Austria), Prague Project Institute, PPI (Czech Republic) and Gestionnaires Sans Frontières, GSF (Romania).
- Complementary data extracted from the European Local Government Organisation (ELGO) data base.

In order to ensure the representativeness of the survey, approximate target numbers for each country were determined by the relative share of population for each country in relation to overall CEEC population.

The questionnaires were sent out to 556 CEE authorities in September/October 1998. Translations of the questionnaire was prepared for 10 languages.

A Microsoft-ACCESS-data entry mask was supplied by Rupprecht Consult. Data entry was done by REC and finished in November 1998.

The survey results were reported for the following different segments, wherever any deviations from that overall pattern were observed:

- geographic segments: Central Europe (Poland, Czech Republic, Slovak Republic, Hungary), South-East Europe (Bulgaria, Romania, Seven) and Baltic States (Lithuania, Latvia, Estonia)
- Authority size segments: the first segment includes authorities with not more than 50.000 inhabitants and the second authorities between 50.000 and 200.000 inhabitants. The third segment comprises large authorities over 200.000 inhabitants
- 1<sup>st</sup> wave and 2<sup>nd</sup> wave accession countries

## 1.3 SURVEY RESPONSE<sup>4</sup>

26% (147) of the authorities having received the questionnaire responded to the questionnaire. The response to the CAPE survey on Environment Telematics in CEEC is considered as well balanced in geographical terms, except for Latvia and Poland which are underrepresented, referring to the total population size. As regards the representation of authority size segments, the sample is acceptable. Only in the Czech Republic, Latvia and Estonia large cities are under-represented in the survey. The majority of the responses came from independent authorities which are not part of a larger authority. Respondents are mainly managers or experts from public administration. Only a few questionnaires were answered by members of staff and elected representatives

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<sup>3</sup> For further information on procedures for the questionnaire survey see: Annex I.

<sup>4</sup> For further information on the survey response and representativeness see: Annex II.

## 2 FACTUAL INFORMATION ON THE ENVIRONMENT

In this part of the questionnaire, authorities were asked to give some specific information on key indicators which would present a broad overview of the status of the environment and on the level of environmental policy action in their authorities.

The key indicators investigated through the survey were:

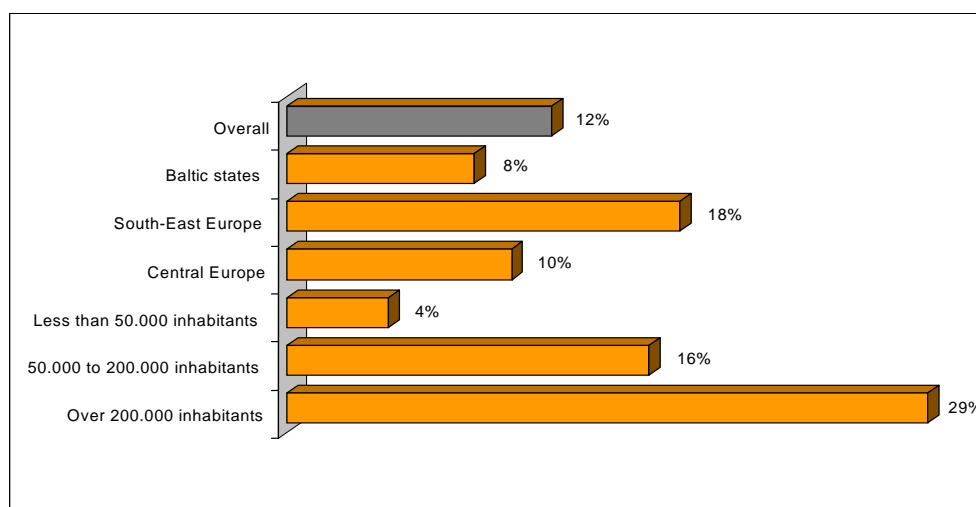
- Critical air quality levels breached in the last 12 months
- Use of installations for filtering in industry plants and central heating stations
- Percentage of households connected to a sewage system
- Incidents of insufficient drinking water quality
- Development of domestic waste

The analysis of these key environmental indicators were not meant to provide a detailed description of the status of the environment in the different accession countries. However, by means of these indicators, it is possible to compare the relative state of the environment and to establish how much progress has been achieved in the development of environmental policy.

### 2.1 AIR QUALITY

Authorities were asked about critical air quality levels breached during the last 12 months, according to their own national laws. As can be seen in figure 1, 12% of the authorities answered that they were obliged to warn the public for certain critical air quality levels<sup>5</sup>. It seems that among South-East European authorities, critical air quality levels are more frequently reached. 18% of the South-East European authorities mentioned to having breached critical air quality standards. Due to the generally higher intensity of sources of pollution, the problem of critical air quality levels is more important in bigger towns. Almost one third of the large authorities (over 200.000 inhabitants) answered that they had experienced critical air quality levels within the last year, whereas only 4% of the small authorities (less than 50.000) stated that they had some serious air quality problems in the past 12 months.

Figure 1: Critical air quality levels breached in the last 12 months (by region and authority size)



<sup>5</sup> The basis for percentages is n=144.

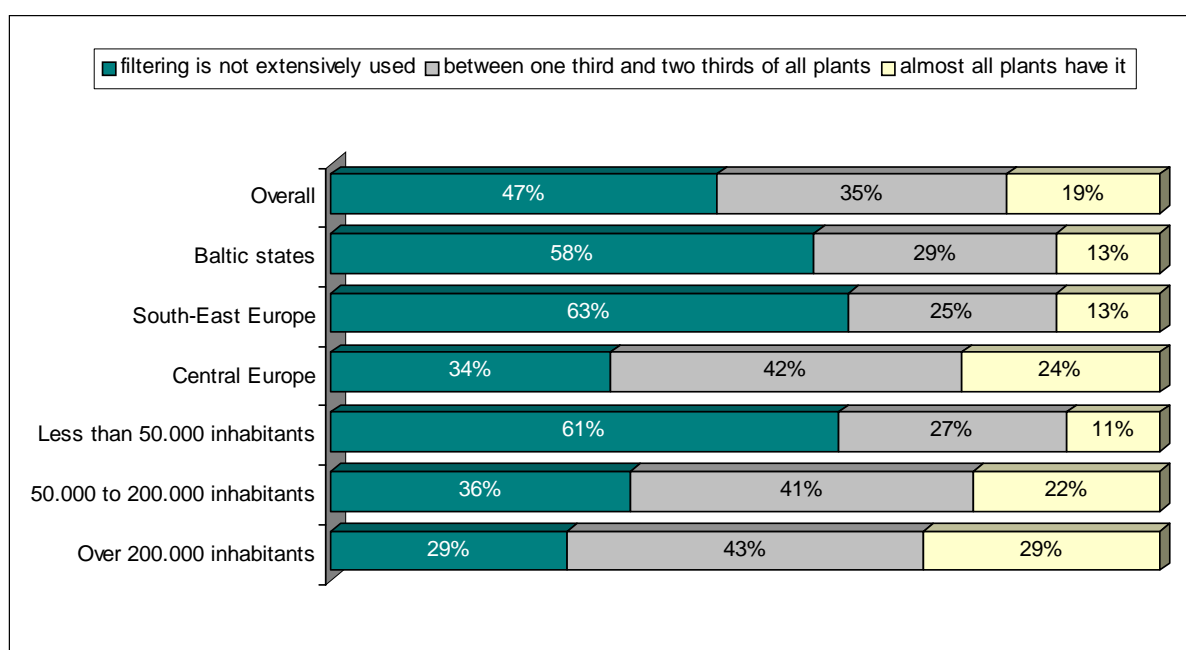
## 2.2 INSTALLATIONS FOR FILTERING

CEEC authorities were also asked to relate the use of installations for filtering dust and gaseous emissions among the main polluters within their geographic responsibility. Almost every second authority (47%) cited that filtering is not extensively used among the main local polluters<sup>6</sup>.

Figure 2 shows that the level of filtering dust and gaseous emissions in South-East Europe and in the Baltic states seems to be much lower than in Central European states. While in the Baltic states and in South-East European authorities about 60% claimed that filtering is not extensively used, this is said by only about one third of the authorities from Central Europe.

It is also clear that the use of installations for filtering in industrial plants seems far less widespread in smaller towns. Only 11% of the towns of less than 50.000 inhabitants indicated that almost all industrial plants are using installations for filtering.

Figure 2: Use of filtering in industry plants and central heating stations (by region and authority size)



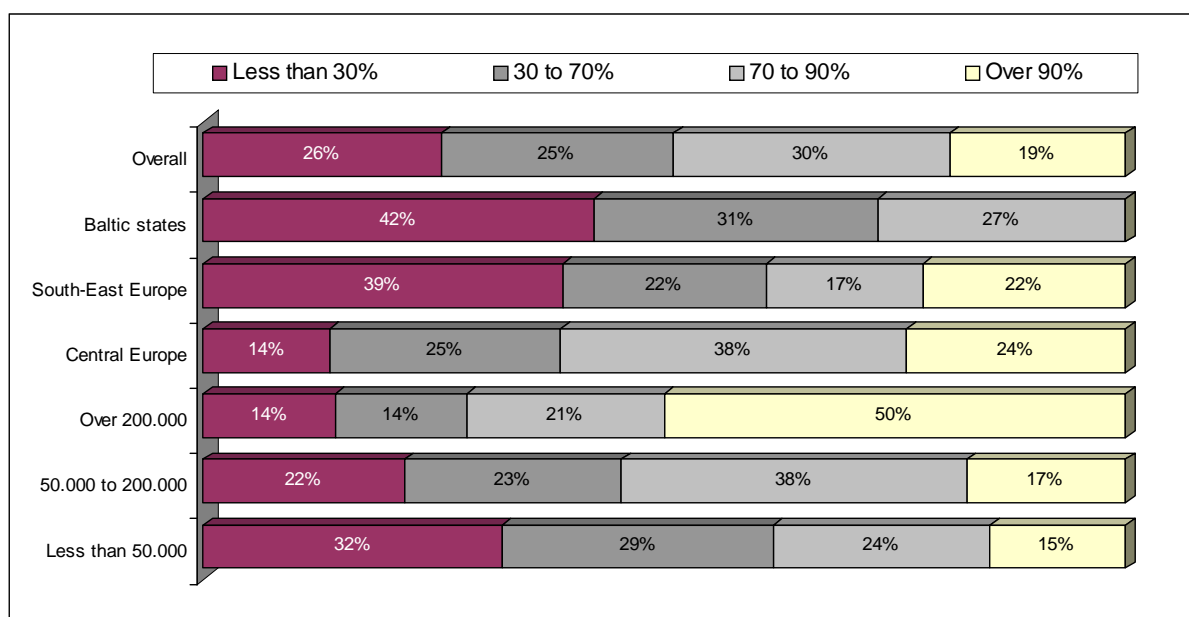
## 2.3 SEWAGE TREATMENT

In about every fourth authority, less than 30% of the households are connected to a sewage treatment system<sup>7</sup>. Among the Baltic states and in South-East Europe, this is the case for about 40%. Figure 3 also reveals that the lack of sewage treatment seems to be a problem more characteristic of smaller authorities. While in only 15% of the small authorities almost all households are connected to a sewage treatment system, this is the case for every 2<sup>nd</sup> large city.

<sup>6</sup> The basis for percentages is n=135

<sup>7</sup> The basis for percentages is n=147

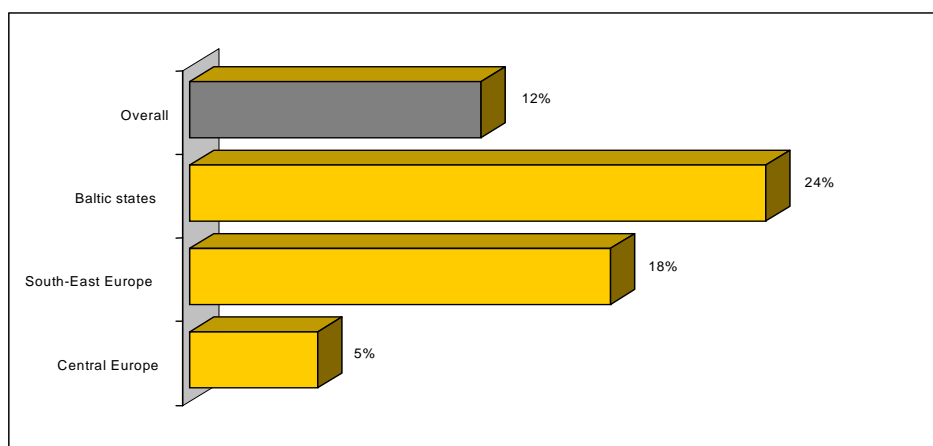
Figure 3: Percentage of households connected to a sewage system (by region and authority size)



## 2.4 DRINKING WATER QUALITY

In particular authorities from the Baltic states are facing problems in ensuring sufficient drinking water quality (figure 4). 12% of all CEEC authorities stated that they had incidents of insufficient water quality during the last 12 months, whereas 24% of authorities from the Baltic states had to face some difficulties in providing sufficient drinking water quality<sup>8</sup>. In contrast, only 5% of the Central European authorities experienced incidents of insufficient water quality.

Figure 4: Incidents of insufficient drinking water quality in the last 12 months (by region)



## 2.5 DOMESTIC WASTE

It can be seen in figure 5 that the amount of domestic waste among CEEC authorities had increased by 8% on average in 1997<sup>9</sup>. In large authorities in particular the increase of domestic waste is above average (10%). It is also worth mentioning that in South-East Europe, the annual increase of domestic waste was

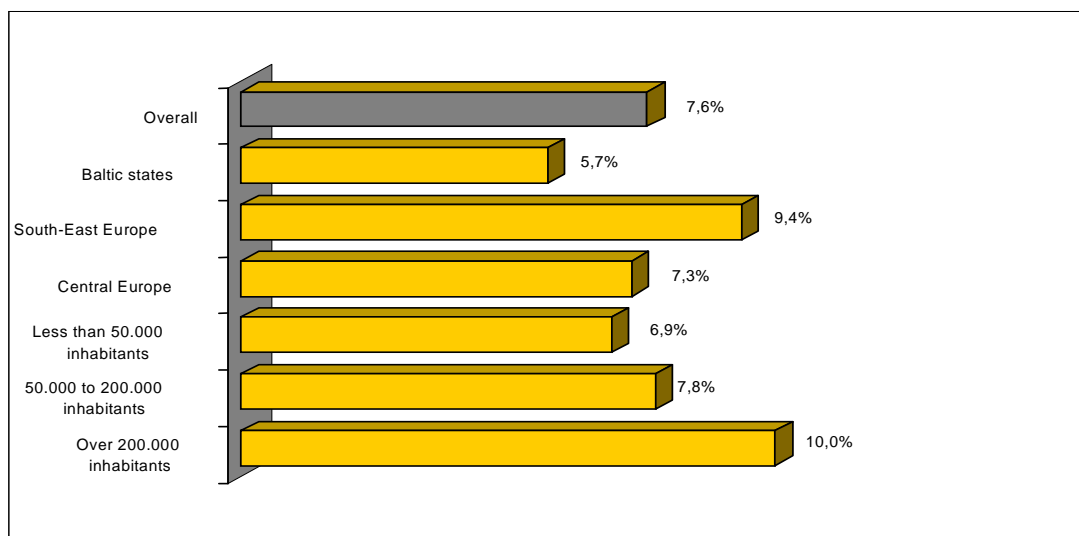
<sup>8</sup> The basis for percentages is n=140

<sup>9</sup> The basis for percentages is n=98



almost 10% in 1997. Contrary to South-East Europe, the average amount of domestic waste in authorities from the Baltic states has only risen by approximately 6%.

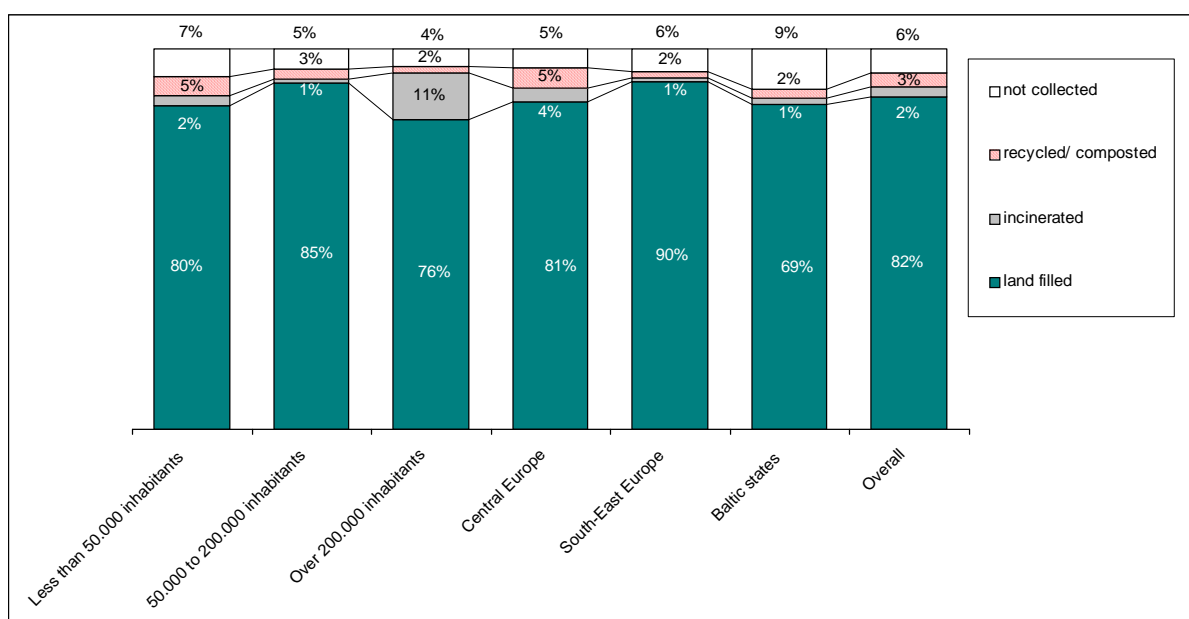
Figure 5: Increase of domestic waste in 1997 (by region and authority size)



## 2.6 DOMESTIC WASTE TREATMENT

Waste management in most CEEC mainly consists of landfill, which is the cheapest available option. In more than 80% of CEEC authorities waste is landfilled and almost 6% of domestic waste is not collected at all (figure 6). On average only 2% of the domestic waste is incinerated, and 3% is recycled. However the levels of recycled and incinerated waste vary within the CEEC. In Central European authorities, 4% of the domestic waste is incinerated and almost 5% is recycled, whereas in the Baltic states and in South-East Europe almost no waste is incinerated or recycled.

Figure 6: Treatment of domestic waste (by region)



## 2.7 SUMMARY

The analysis of the key environment indicators has shown that:

- 12% of the authorities stated that they had some critical air quality levels breached in the last 12 months, according to their own national laws. This percentage cannot be compared with EU results, since in the EU national laws are more strict.
- The level of filtering installations among main polluters is low. Compared to EU authorities (62% of the authorities mentioned that almost all plants are equipped with installations), only 19% of the CEEC authorities answered that almost all plants have filtering installations.
- Approximately 20% of the CEEC authorities claimed that over 90% are connected to a sewage system. In EU authorities this is true for every second authority.
- The low level of installations for filtering and sewage systems, indicates that authorities from South-East Europe and from the Baltic states generally have a lower standard of environmental policy action or give less priority to environmental issues. The same can be said for smaller towns.
- The annual growth rates of domestic waste in accession countries are high (8%). Generally, in South-East Europe and in large authorities growth rates are even higher (10%).
- Compared to EU countries, the proportions of recycled and incinerated waste are still very small. On average, only 2% of the domestic waste is incinerated and 3% is recycled. However the levels of recycled and incinerated waste vary considerably within the CEEC.

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## 3 KEY PROBLEMS AND POLICY AREAS

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In addition to the analysis of the perceived environmental problems, it is of particular interest to examine the authorities' view on environmental problems and their approaches to dealing with them. First respondents were asked in an open question to name their given perceptions of the three most pressing problems related to the environment. Then "multiple choice" answers were solicited concerning authorities' viewpoints on the importance of environmental problems. The section serves also as a basis for evaluating, to what extent authorities might rely on telematics to solve the most pressing environmental problems.

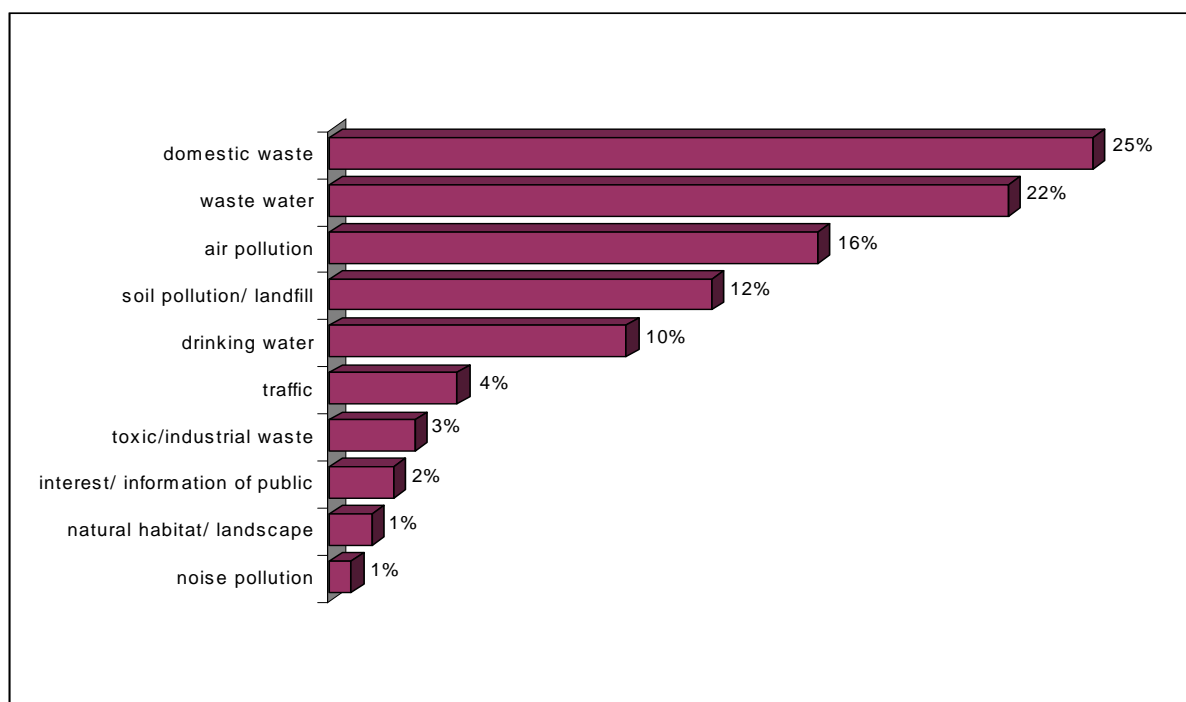
### 3.1 KEY ENVIRONMENT PROBLEMS

The analysis of the open question makes clear, that the most important environmental problems were indicated in the area of managing domestic waste (figure 7)<sup>10</sup>. Whereas almost one fourth of the respondents mentioned problems related to domestic waste as their most acute problem, some 22% perceived problems in waste water management as the most pressing issue. 16% named air pollution as a priority problem. Other problems cited include: soil pollution/landfill (12%) and drinking water (10%).

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<sup>10</sup> The basis for percentages is n=147

Figure 7: Most important environmental problems



Additionally respondents were requested to provide from a given list of common environment related problems, an indication of whether they are:

- not important at the moment
- Short-term problem (to be solved in the next 2-3 years)
- Long-term problem (which may take many years to be solved)
- Priority area in future policies

Again, the most important problems to be solved in the next 2-3 years are seen in the area of waste management (figure 8). For almost 50% of authorities, the rising levels of domestic waste is a very important short-term problem.

Other important short-term problems are:

- “Illegal waste dumping” (44%)
- “Treatment of sludge from waste water plants” (39%)
- “Disposal of hazardous waste” (34%).

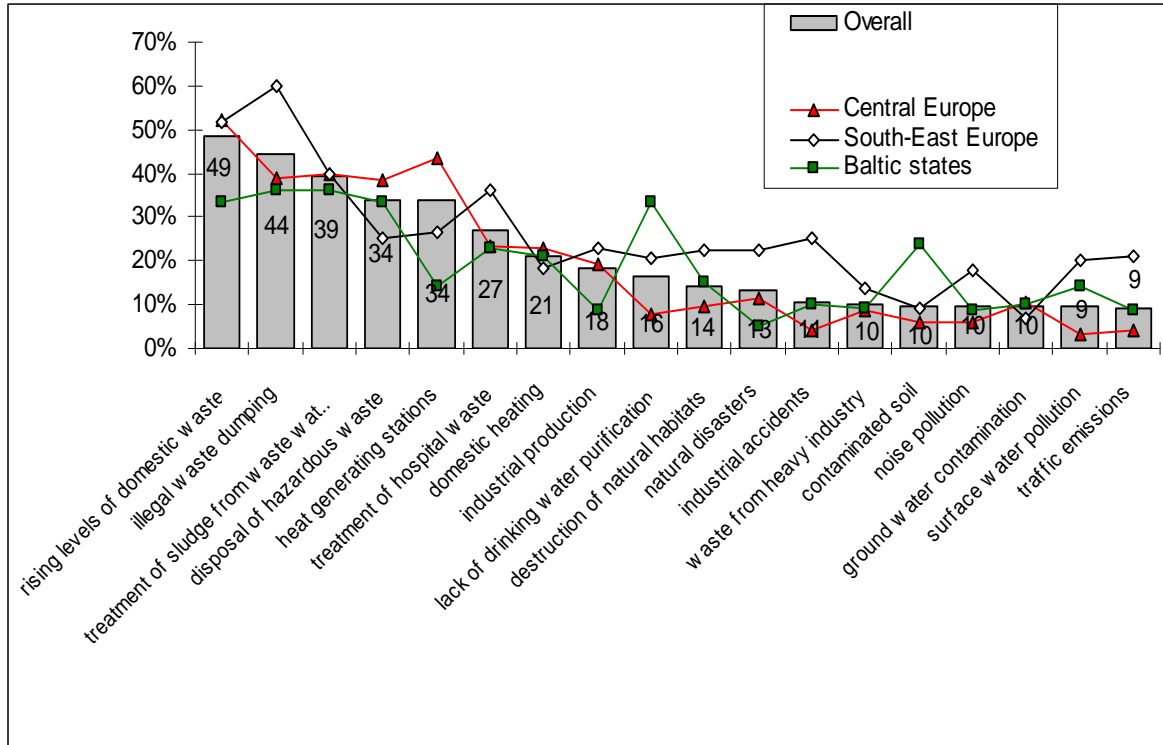
It is striking, that the perception of these short-term problems is generally above-average in authorities from South-East and Central Europe.

Short-term problems of secondary importance are:

- “Traffic emissions”,
- “Surface water pollution”

- “Ground water contamination”
- “Noise pollution”

Figure 8 Short-term environmental problems (by region)



The following issues were most frequently mentioned to be an important problem which may take many years to be solved:

- traffic emissions (66% of the surveyed authorities)
- noise pollution (49%)
- domestic heating (43%).

In particular in medium-sized and large authorities, as well as in Central European authorities, the importance of traffic emissions and noise pollution as a problem are rated even more highly. It is interesting to note that “traffic emissions” and “noise pollution” were identified as important long-term problems, but not considered as problems that can be solved in the space of a few years. Apparently authorities believe that traffic related problems, although they might be very pressing problems, cannot be solved by short-term measures, but need a long-term strategic approach.

Figure 9: Long-term environmental problems (by city size)

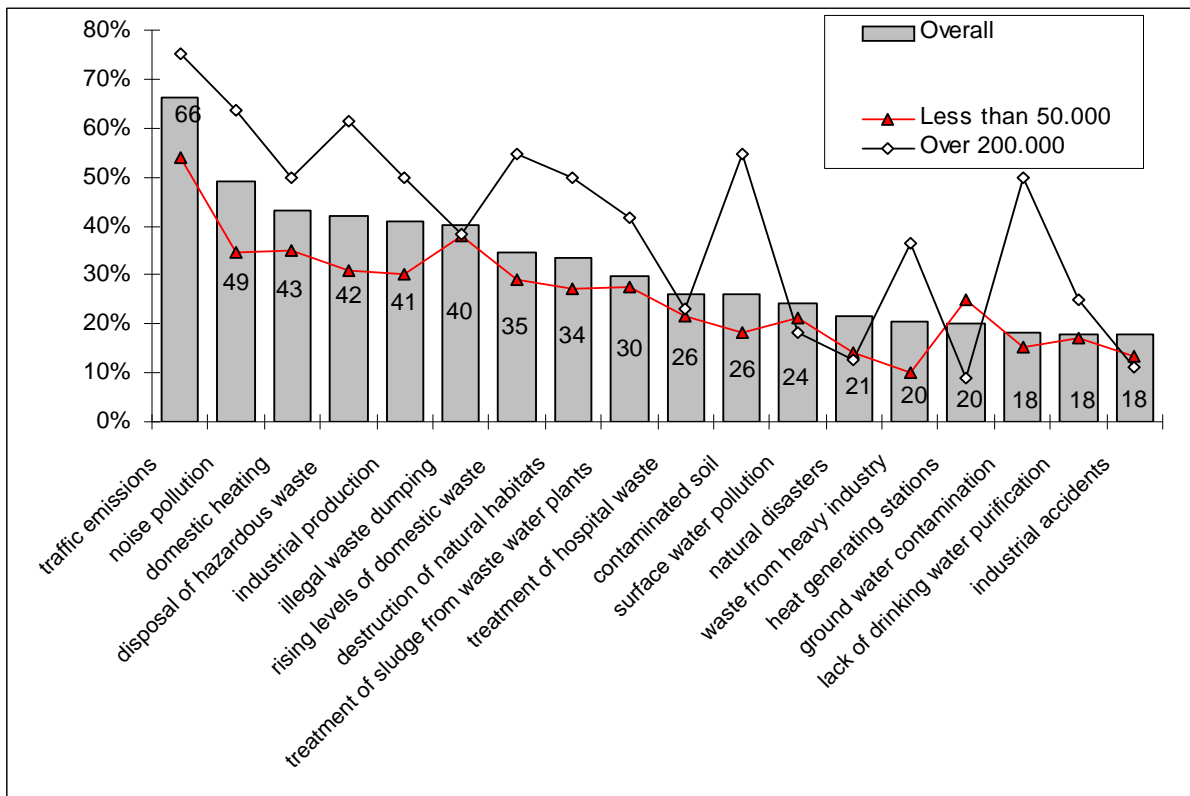
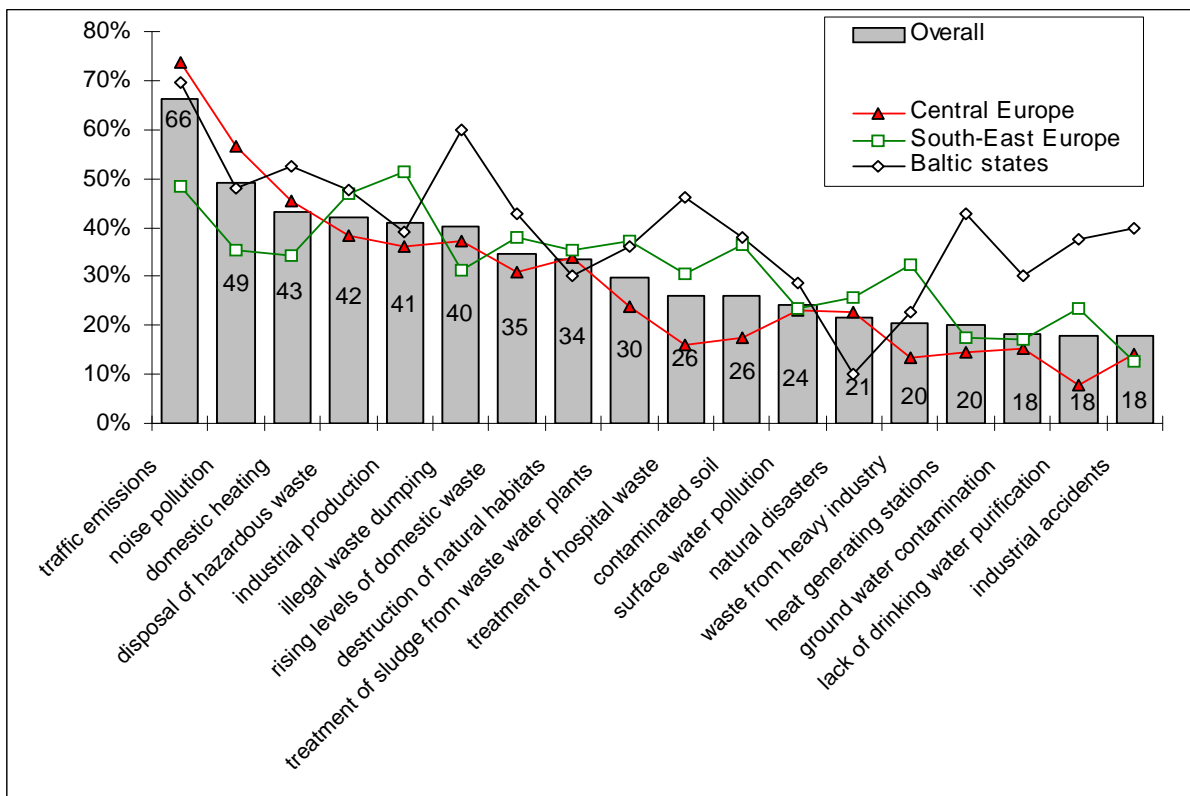


Figure 10: Environmental problems at the long term (by region)



When authorities were asked which environmental problems are currently not perceived as being important, the following areas were mentioned most frequently:

- “Ground water contamination” (72%)
- “Industrial accidents” (72%)
- “Waste from heavy industry” (69%)
- “Surface water pollution” (66%)
- “Lack of drinking water purification” (66%)

Concerning future priorities in environmental policies, improving waste management seems to be the most important issue. Reducing the rising levels of domestic waste is named by almost 40% of all authorities to be a priority over the coming years. 47% of South-East European authorities declared domestic waste management as a priority area.

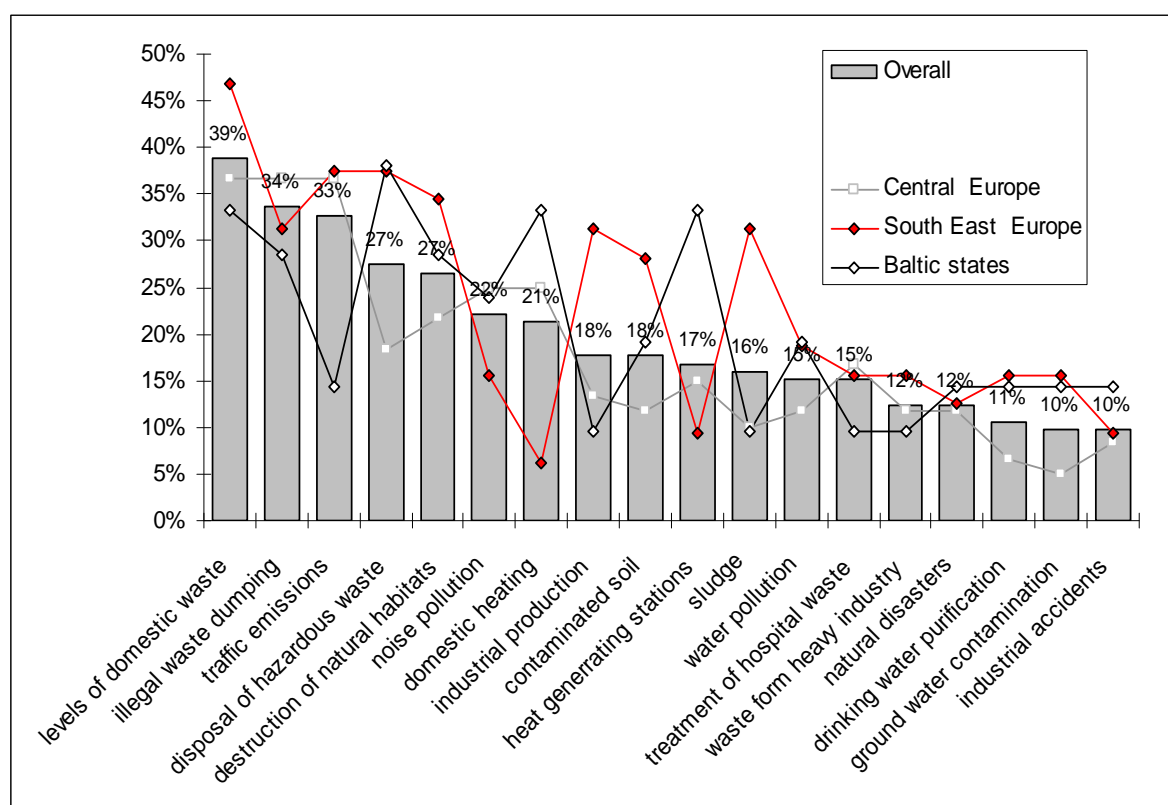
Other areas of major priority for CEEC authorities are:

- to prevent illegal waste dumping (34%)
- to reduce traffic emissions (33%)
- to improve the disposal of hazardous waste (27%)

Among the Baltic states, the first future priorities are slightly different: “Hazardous waste disposal” is first (38%) followed by “domestic waste management”, “domestic heating” and “heat generating stations” (each 33%).

The demand for a more active environmental policy seems to be much higher in large authorities. The priority areas for future environmental policies in large authorities are: traffic emissions, destruction of natural habitats, sludge and contaminated soil.

Figure 11: Priority areas in future environmental policies (by CEEC-region)



### 3.2 SUMMARY

The perception of environmental problems can be summarised as follows:

- The most pressing environmental problems are undoubtedly to be found in the area of waste management, whereas in EU authorities transport related problems are considered to be the dominant problem.
- With respect to the most pressing problems at short-term, the results for the CEEC authorities are quite similar to the EU survey. Again waste related problems were mentioned most often. Not only the increasing levels of domestic waste, but also the problems of illegal waste dumping, the disposal of hazardous waste and the treatment of sludge from waste water plants are considered to be acute problems at short term.
- “Traffic emissions” and “Noise pollution” are most commonly identified as very important long-term problems, but not as short-term problems. In particular in Central Europe as well as in larger authorities these problems are particularly significant.
- It is worth mentioning that also in the EU authorities these traffic related areas are identified as the most important problems at long term. Apparently cities and regions not only in the EU but also from Central and Eastern Europe believe that traffic related problems can only be solved by means of a long-term strategic approach.
- “Ground water contamination”, “Industrial accidents”, “Waste from heavy industry”, “Surface water pollution” and “Lack of drinking water purification” are environmental problems considered to be of least importance.

- According to the most pressing problems, the major priority areas of environmental policy action are seen to be in improving waste management and reducing traffic emissions.

### 3.3 POLICY AREAS

Having examined the most important problems among the authorities and regions of the accession countries, one can look at the current implementation of different kinds of policies (figure 12), responding to these problems. For this reason, decision-makers were asked to give some details on the level of policy action in different environmental areas<sup>11</sup>.

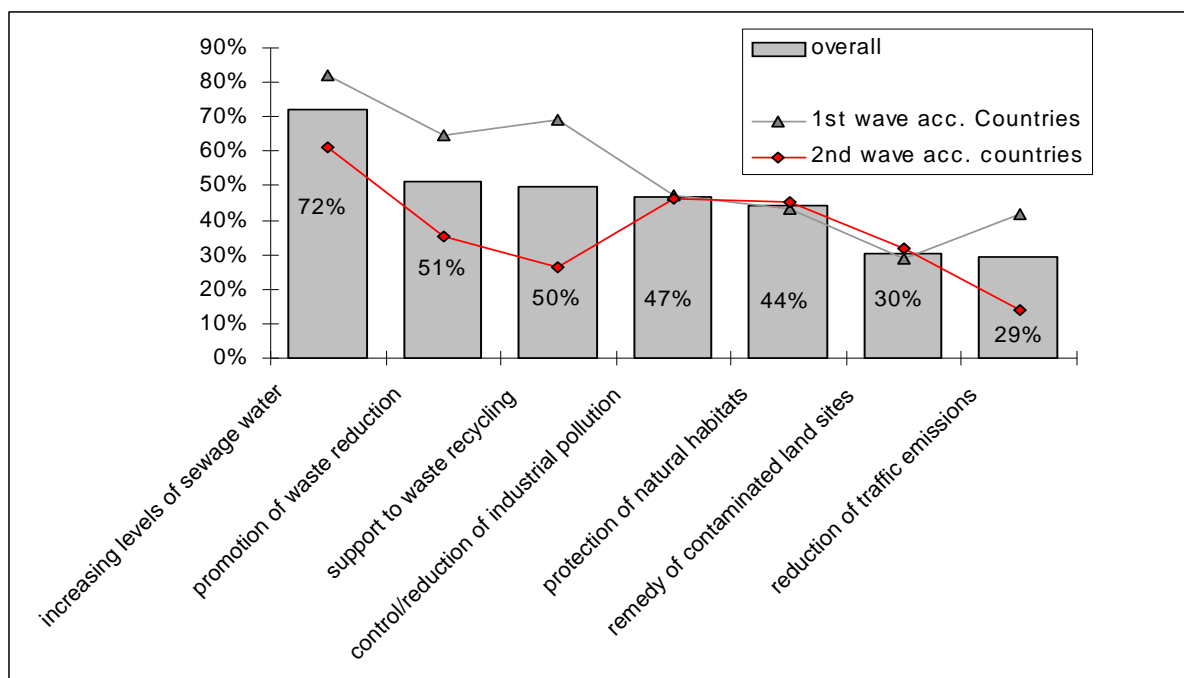
Except for sewage water treatment, the level of environmental policy action is relatively low.

Three out of four authorities answered that they have a policy in the area of sewage water treatment. Only about half of the authorities or less responded that policies operate in the field of waste reduction or waste recycling. Policies for the reduction of traffic emissions and for the remedy of contaminated land sites has been developed in less than one third of the authorities.

However, many authorities are planning to implement environmental policies in the near future. In approximately 40% of the authorities policies for “reduction of traffic emissions”, “support of waste recycling” and “promotion of waste reduction” are not in operation, but planned.

According to the survey results, authorities from the first wave accession countries are generally more advanced than those from second wave countries, with regard to environmental policies. As can be seen in figure 12, over 40% of the authorities from first wave accession countries have stated policies on reducing traffic emissions, whereas this is the case for only 14% of the authorities from within second wave accession countries. Clearly, the first wave accession countries have already started to adopt environmental policies and standards closer to those of the European Community.

Figure 12: Environmental policies in operation (by order of accession)



<sup>11</sup> The basis for percentages is n=144



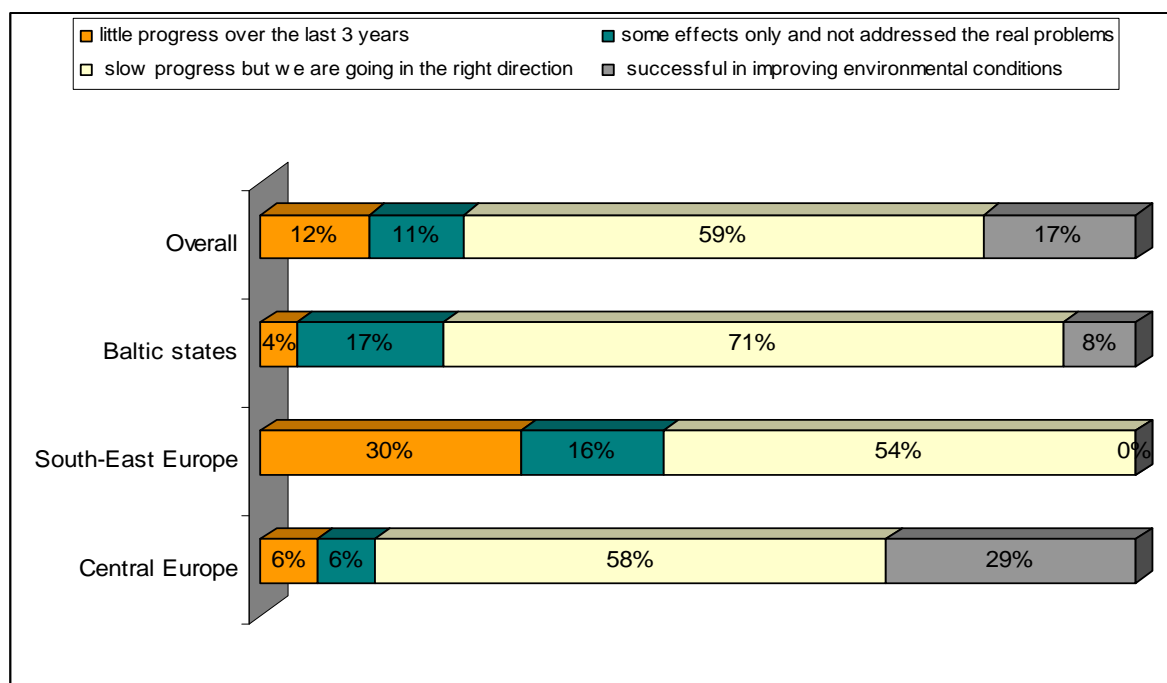
### 3.4 EFFICIENCY OF ENVIRONMENTAL POLICY

Authorities were also asked to the efficiency of their environmental policies.

The analysis shows that self assessment was fairly positive. Almost 60% believe that although they have made slow progress, they are in the right direction<sup>12</sup>. Another 17% are convinced that their environmental policy has been successful in improving environmental conditions. Some 20% judge their environmental policy negatively. 11% believe that they have partially dealt with some issues but have not addressed the real problems. Some 12% of all authorities believe their environmental policy has only made little progress over the last 3 years.

As can be seen in figure 13, especially those authorities from Central Europe believe that their environmental policy has been successful. In Central Europe 29% of the authorities tend to believe that their environmental policies have shown positive results, whereas only 8% of the authorities from the Baltic states and 0% of the South-East European authorities think that they have been successful in improving environmental conditions.

Figure 13: Personal judgement of the efficiency of environmental policies (by region)



### 3.5 SUMMARY

The overall status of environmental policy can be described as follows:

- In many environment related areas the level of political action in CEEC authorities is fairly low.
- Policies for the reduction of traffic emissions and for the remedy of contaminated land sites is in operation in less than 1/3 of the authorities.
- Environmental policies are mainly implemented in the areas of sewage treatment, waste reduction and waste recycling.

<sup>12</sup> The basis for percentages is n=138

- With regard to environmental policies, first wave accession countries are generally more advanced than second wave countries, which is mainly due to their obligation to adopt environmental policies and standards close to those of the European Community.
- Many authorities have the intention to develop environmental policies. For areas like “reduction of traffic emissions”, “support of waste recycling” and “promotion of waste reduction” about 40% of the authorities would like to develop policy strategies in the next years.
- Although the level of environmental policy is often not very high, the majority of the respondents think that the achievements of their environmental policy are positive. About two third of the authorities stated that their environmental policy has either been successful in improving environmental conditions or has made some progresses.

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## 4 IMPACT AND RELEVANCE OF TECHNOLOGY

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In this part of the questionnaire, respondents were asked to examine the impact of information and communication technologies in dealing with environmental problems.

Specifically the short term impact (2-3 years) of modern technologies on different areas of environmental policy was rated as low, moderate or high. The objective of this part is to help to clarify how CEEC authorities anticipate these new technologies.

### 4.1 IMPACTS OF TELEMATICS SYSTEMS ON ENVIRONMENTAL MANAGEMENT

According to figure 14, expectations are highest for an improvement in information collection and dissemination and environmental education<sup>13</sup>. 56% of the decision-makers believe that information and communication technologies will help improve the decision-making process and 54% stated that new technologies will have positive effects on internal education. The survey results make clear that in particular authorities from South-East Europe believe telematics will help to improve the decision making process (77%).

Other areas that CEEC authorities expect to be strongly influenced by new technologies are “enhancing public awareness of environmental issues” (49%) and “preventing or better management of emergencies” (46%).

Perception among decision-makers of telematics problem solving capacity seems to vary. While its impact on improving waste management is estimated by 45%, only 13% assume that telematics can help reduce air pollution. Significant impacts of information technologies on reducing negative impacts of transport or minimising noise pollution are only seen by approximately 10% of the authorities.

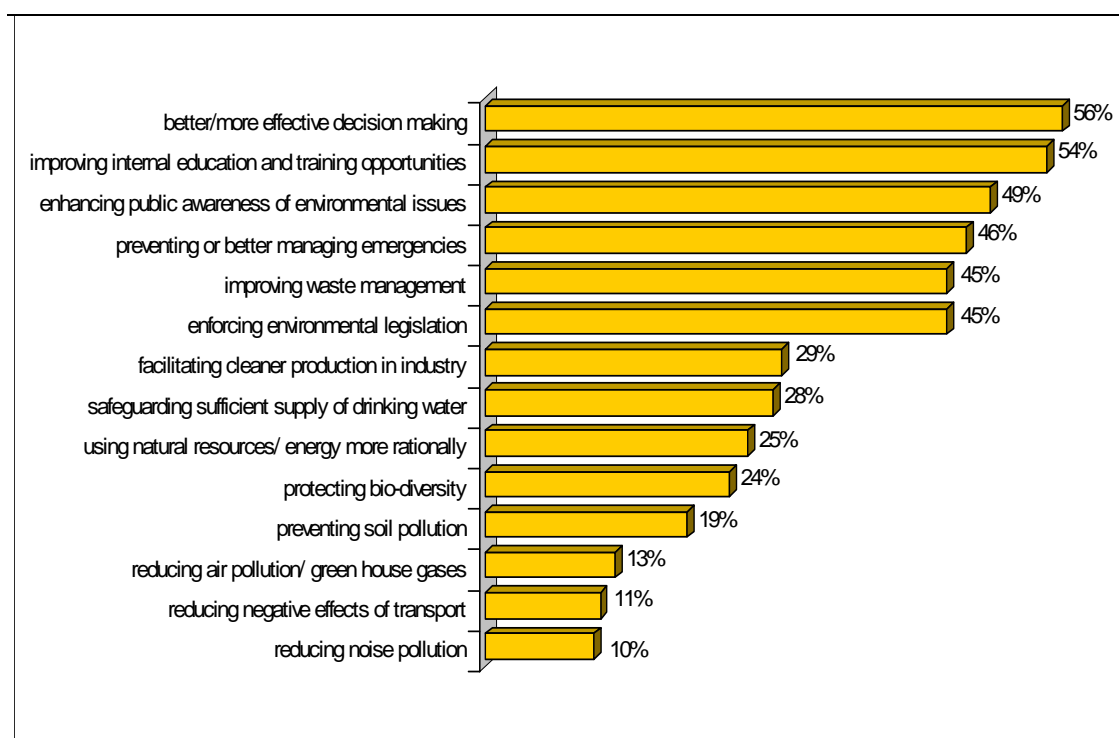
Other areas where the impact of IT is considered to be low are:

- “preventing soil pollution” (19%)
- “protection bio-diversity” (24%)
- “using natural resources/energy more rationally” (25%)

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<sup>13</sup> The basis for percentages is n=146

Figure 14: Significant impacts of information and communication technologies in the next 2-3 years

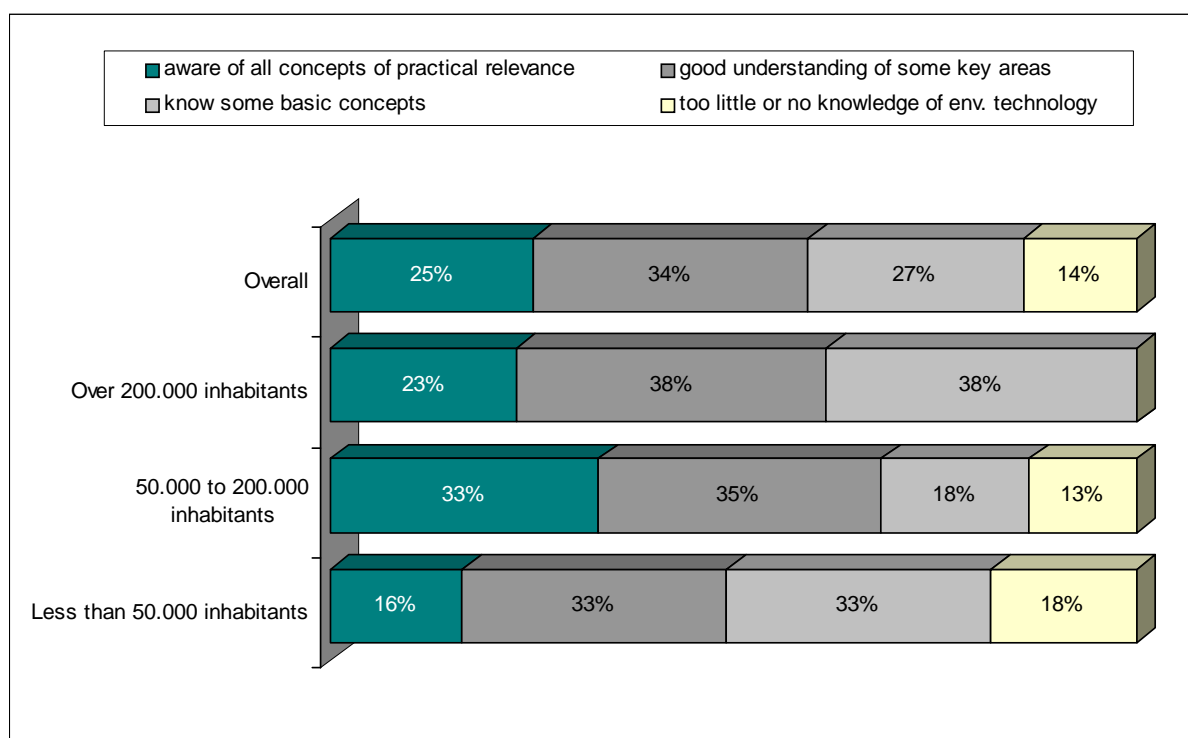


#### 4.2 PERSONAL EXPERTISE

Respondents were also asked to rate their level of expertise in applying modern technologies in the area of the environment (figure 15). While 25% of the authorities mentioned that they are aware of all concepts of practical relevance, 34% believe that they have a good understanding of some key areas only. Knowledge of some basic concepts was mentioned by 27% of the respondents while about 14% of the respondents believe that they have “too little knowledge” or “no knowledge at all” of environmental technology.

Although many authorities are aware of the advantages of applying information and communication technologies in their authority, the analysis of the level of expertise has shown that there is a need for obtaining more detailed information on the use of modern technologies in the area of the environment. This need seems to be particularly high in smaller authorities, where the level of expertise is below average.

Figure 15: Personal level of expertise concerning environment technology use (by city size)



#### 4.3 SUMMARY

The main survey results relating to the perception of impacts are:

- In comparison to the EU authorities, the general attitude of CEEC authorities towards the impacts of telematics is more positive. The percentages of decision-makers that see significant impacts of telematics on various environment related areas is higher in CEEC.
- Areas with highest impact of telematics are in principle similar in EU authorities and CEEC authorities.
- The highest impact of telematics applications is expected to be in the area of improving the decision making process, improving internal education and training opportunities and enhancing public awareness of environmental issues.
- The problem-solving capacity of telematics is considered to be fairly limited in areas, such as “reducing noise pollution”, “reducing negative effects of transport” and “preventing soil pollution”.
- However, the potential of telematics systems to contribute in solving the most important problems is seen very differently. While the significance of telematics for solving long-term problems (noise pollution, traffic emissions) seems to be very low, 45% of authorities believe that telematics can help to improve waste management, which is identified to be the most important environmental problem at short term.
- In CEEC authorities there is a need for obtaining more detailed information on the use of modern technologies in the area of the environment. One quarter of the authorities stated that they only know some basic concepts of environmental technology and 14% of the respondents mentioned that they have too little knowledge or no knowledge at all. The highest demand seems to be in small authorities, where the level of expertise is below average

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## 5 EXPECTED BENEFITS AND OBSTACLES IN USING TELEMATICS TECHNOLOGIES

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To gain a better understanding of what CEEC authorities expect from information and communication technologies, and where the major difficulties lie in implementing them, respondents were asked to rank the 5 major benefits and obstacles relating to their use in administrative work. The statistical mean for each variable (benefit/obstacle) was calculated (1=highest value).

### 5.1 BENEFITS

The ranking of the benefits shows no extreme trends. However, the most important benefits of using telematics in the field of the environment are seen in<sup>14</sup>:

- “Improved planning and decision-making processes” (2,3)
- “Better internal communication and work flow” (2,7)
- “Greater cost efficiency” (2,7)

Other important benefits of the use of telematics systems are:

- “Generally higher rate of enforcement of regulations” (3,0)
- “Greater awareness of environmental issues” (3,1)

Benefits of only secondary importance are:

- “Better access of citizens to environmental information” (3,2)
- “Better co-operation with other institutions” (3,2)
- “Better technical integration” (3,3)
- “Improved outside image of authority” (3,8)

The major benefits of telematics use are seen in different areas in CEEC and EU authorities, except for “improved planning and decision making processes” and “higher quality of public services”, which are considered in all European authorities to be key advantages of telematics.

It is worth mentioning, that in CEEC the effect of telematics on a better access to environmental information is seen not as a major benefits, in contrast to EU authorities.

### 5.2 OBSTACLES

The wider implementation of new information and communication technologies faces a number of obstacles. To enhance their use among CEEC local and regional authorities, it is essential to find out, what the most important obstacles to implementation are.

By far the most substantial obstacle is insufficient finance (1,8), which is also identified to be the most important obstacle amongst EU authorities<sup>15</sup>.

Other major constraints to implement telematics systems are:

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<sup>14</sup> The basis for percentages is n=105

<sup>15</sup> The basis for percentages is n=147

- “Difficulty in supplying up-to-date and relevant information” (2,9)
- “Legal problems” (3,0)
- “Problems of institutional/interdepartmental co-operation” (3,0)
- “Lack of qualified staff” (3,1)
- “Technical problems” (3,2)

It seems that besides the problem of financing, in particular the problem of limited local experience and knowledge related to telematics solutions needs to be solved. Additionally local and regional bureaucracy, poor co-operation between the various actors and lack of public-private partnership are other key obstacles.

The following items are considered to be obstacles of minor importance:

- “Lack of political support” (3,3)
- “Lack of awareness of services on part of the citizens” (3,4)
- “Opposition from polluters” (3,5)
- “Complexity of new services” (3,8)

From the fact that lack of political support is not amongst the key obstacles (in contrast to EU authorities), it can be concluded that the further implementation of telematics in the environment field generally is supported by decision-makers. But with regard to the limited financial resources, the actual implementation levels of modern technologies may not necessarily be rising significantly.

### 5.3 SUMMARY

Concerning the benefits and obstacles of using telematics, it is worth mentioning:

- With regard to the benefits of telematics use, no clear trend emerges in CEEC. However, “Improved planning and decision making” and “improved internal communication/work flow” are those benefits, which are mentioned most often in CEEC authorities.
- Not only in the CEEC authorities, but also in the EU, insufficient public funding is considered to be the by far most important obstacle for a better telematics uptake in the environment field.
- The difficulty in supplying up-to-date and relevant information is another key obstacle for both, CEEC and EU authorities.
- Other important obstacles are seen in a lack of institutional co-operation, legal problems and lack of qualified staff.

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## 6 INTERNAL USE OF TELEMATICS SYSTEMS

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It was one of the key objectives of this questionnaire to ascertain the internal use of environment related telematics systems in CEEC authorities and to gain an understanding of future priorities. CEEC authorities were first asked to give some details on the availability of environmental data and the technologies used to handle and analyse this data. Then authorities were asked to outline the internal use of telematics systems and the application of basic technologies. This information will help for developing targeted strategies to enhance the dissemination of telematics good practices to the CAPE project's target groups.

### 6.1 DATA AVAILABILITY

For the implementation of any new environment telematics systems and services, a good availability of key data on environmental conditions is necessary. Three items were selected for indication of availability by respondents (sufficiently available, partly available, not available). In addition respondents were asked to mention their future priorities for environmental data provision.

As regards the availability of data to local authorities, figure 16 reveals that 85% of the authorities believe they have sufficient data on environmental legislation<sup>16</sup>. Other areas where the availability of data is relatively good are "land use" (59%), "main pollutants of drinking water" (57%) and "meteorological conditions" (51%). For most other areas the general availability of environmental data is extremely low.

Major deficiency areas, concerning data availability are:

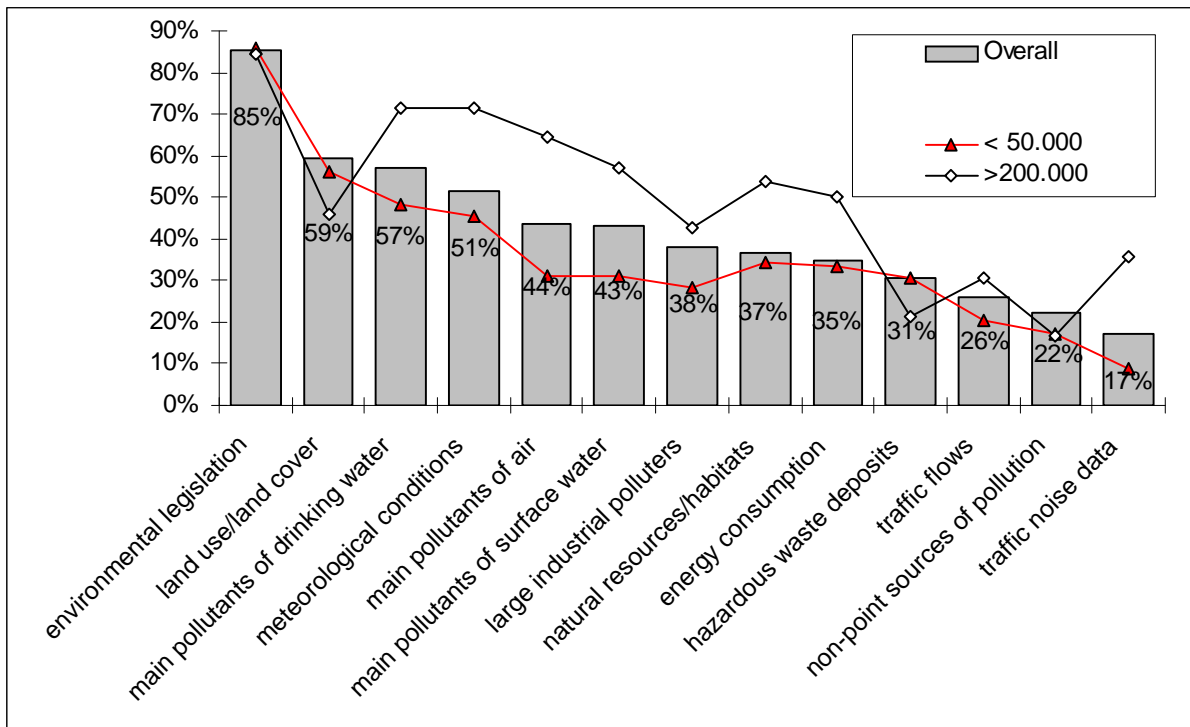
- "Traffic noise data" (17%)
- "Non-point sources of pollution" (22%)
- "Traffic flows" (26%)
- "Hazardous waste deposits" (31%)
- "Energy consumption" (35%)

Comparing the different authority sizes, it is obvious that the general availability of environmental data on drinking and surface water quality, weather conditions and air pollution is much lower in smaller towns than in larger ones. Concerning air pollution, for example, only 31% of the small authorities but 64% of the large authorities answered that data is sufficiently available.

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<sup>16</sup> The basis for percentages is n=147

Figure 16: Sufficient data availability (by authority size)



An examination of those areas, where no data at all is available, shows that 41% of the surveyed authorities have no data available on traffic noise. Almost every third respondent announced that data on “traffic flows“ and “non-point sources of pollution” is missing completely.

Figure 17 shows the future priorities of authorities concerning the provision of environmental data. Improving data on air pollution was referenced as the major priority. 72% of authorities cited they plan to ameliorate the quality and quantity of data on air pollution.

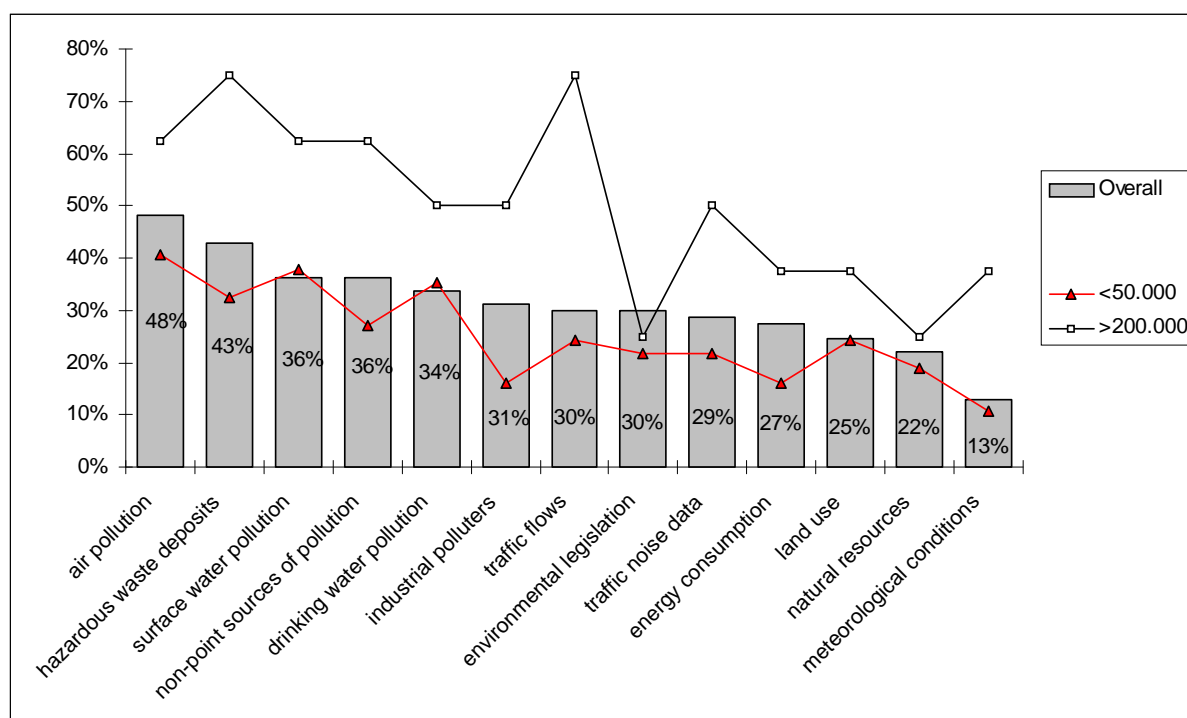
Other priorities are seen in the following areas:

- “hazardous waste deposits” (43%)
- “surface water pollution” (36%).
- “non-point sources of pollution” (36%).

Comparing the priorities between geographical categories, no significant differences relating to the overall average could be identified. The analysis of the categories of city size however makes clear, that the use and the demand for environmental data in general seems to be much higher in bigger authorities, especially those over 200.000 inhabitants.



Figure 17: Future priorities in acquisition of environment-related data (by authority size)



## 6.2 TECHNOLOGIES FOR HANDLING ENVIRONMENTAL DATA

Looking at the technologies that are used by the authorities in the CEEC to handle and analyse environmental data, the survey makes clear that its overall use and implementation is very limited.

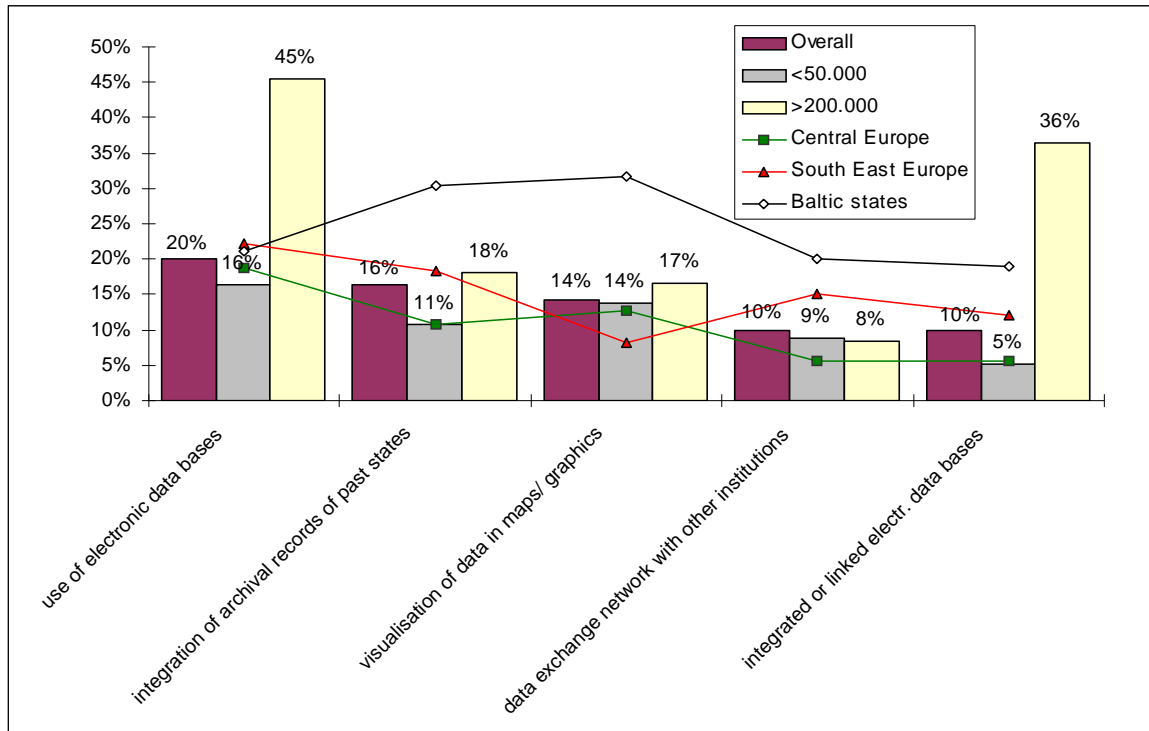
In only between 10-20% of the authorities the following technologies are available<sup>17</sup>:

- “electronic data bases” (20%)
- “integration of archival records of past states” (18%)
- “visualisation of data in maps/graphics” (17%)
- “data exchange network with other institutions” (10%)
- “integrated or linked electronic data bases” (10%)

The availability of technologies for handling and analysing data in the Baltic states, compared to the authorities in Central and South-East Europe, is relatively high. It is also interesting to note that especially the use of electronic data bases and integrated or linked electronic data bases are much more commonly applied in large authorities.

<sup>17</sup> The basis for percentages is n=147

Figure 18: Availability of technologies for data handling and analysis (by city size and region)

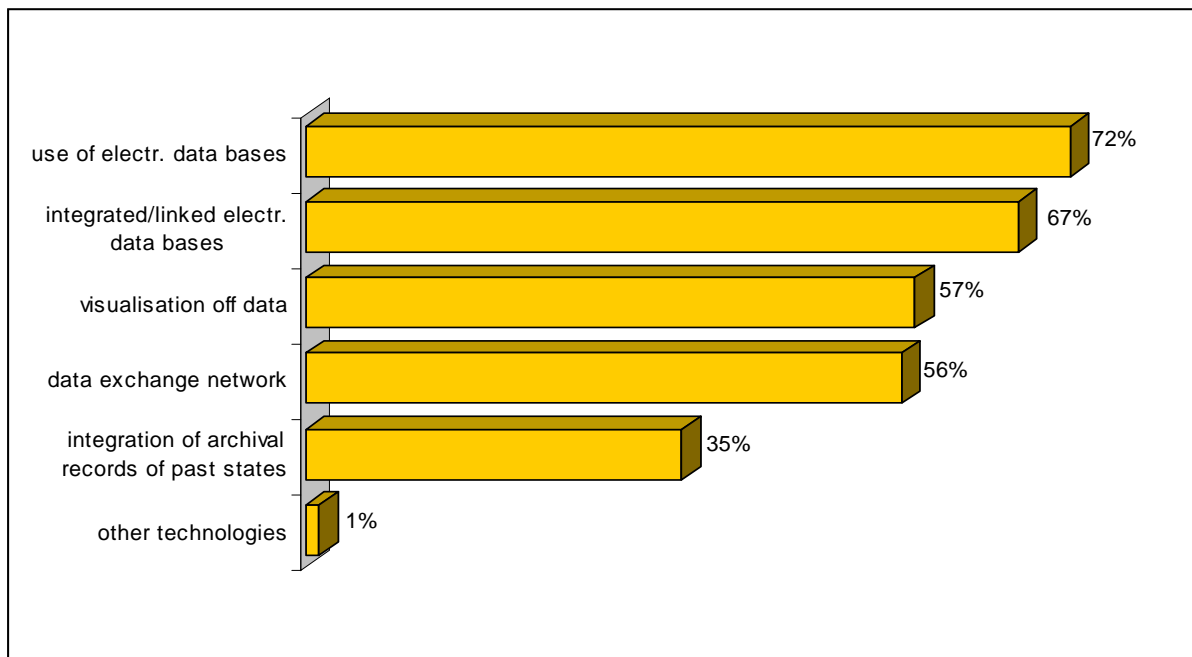


Many authorities are about to implement technologies to handle and analyse environmental data or are planning to promote them in the future. In 46% of all authorities the visualisation of data in maps/graphics is partly implemented and 36% indicated that they are already partly using electronic data, but that technology support is still incomplete.

Regarding the future priorities in data handling technologies (as shown in figure 19), authorities mainly seem to focus their attention on ensuring better use of electronic databases. 72% of authorities declared that the use of electronic databases will be a priority in future policies and 68% rate the integration of electronic databases as a future priority. Still, 57% of the authorities are also planning to push forward the visualisation of data in maps/graphics, and 56% want to improve the data exchange networks with other institutions.

The priorities for using these technologies are quite evenly distributed between the different regions in the CEEC and authority sizes.

Figure 19: Priority areas in future data handling and analysis technologies



### 6.3 SUMMARY

The main findings of the survey relating to the availability of environmental data and technologies are:

- The availability of environmental data often seems to be unsatisfactory and is therefore an obstacle to the implementation of telematics services. In particular, data concerning “traffic noise”, “non-point sources of pollution”, “traffic flows”, “hazardous waste deposits” and “energy consumption” often seems to be unavailable.
- In general the availability of environmental data is much better in larger authorities.
- The ranking of priorities of future data acquisition is in line with the most pressing problems. Authorities primarily want to focus their efforts on improving the provision of environmental data on air pollution and hazardous waste deposits. This shows that in general the authorities are aware of the need for good environmental data in implementing better environmental management
- In comparison to EU authorities, the use of information technology to handle and analyse environmental data is fairly limited. These technologies are in general only available in about 10-20% of the authorities in the CEEC. However, many authorities are about to implement these technologies or are planning to promote them in the future.
- The general availability of technologies seems to be higher in large authorities as well as in authorities from the Baltic states.
- The future demand for data handling and analysing technologies is very high. Around 70% of the authorities want to improve the use and the integration of electronic databases.

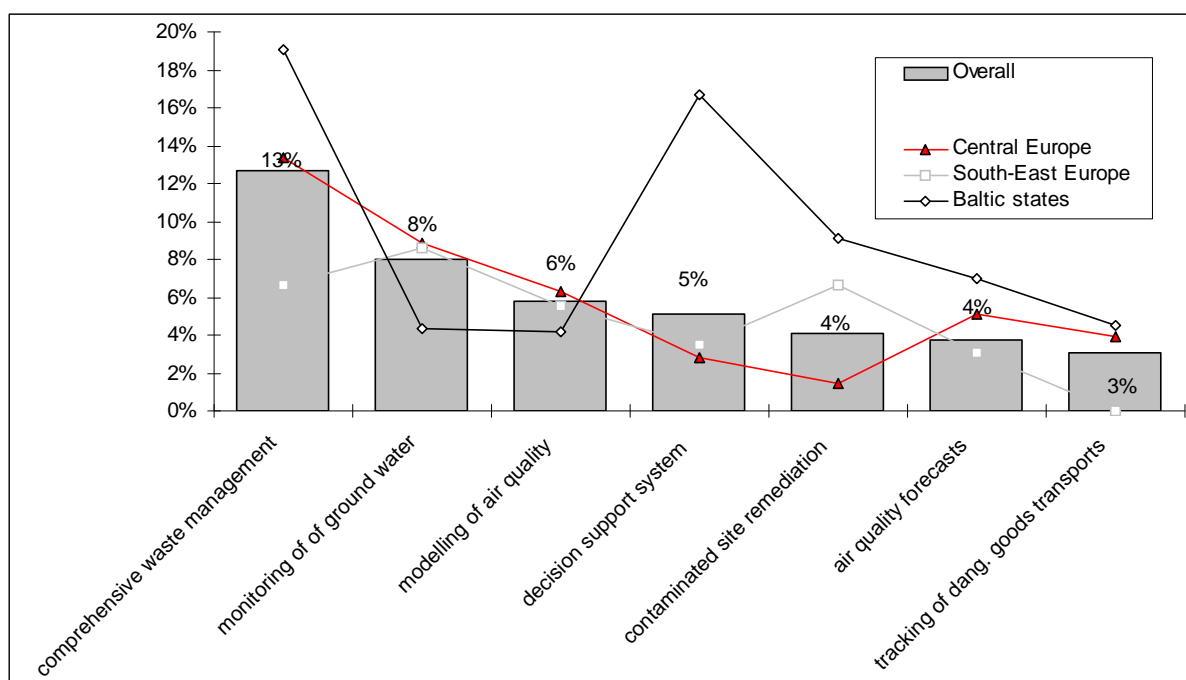
### 6.4 TELEMATICS APPLICATIONS

Figure 20 gives an overview, as to what extent certain environmental areas are currently being supported by information and communications technologies.

The survey results reveal clearly that the use of telematics is not yet widespread amongst the authorities in the CEEC<sup>18</sup>. The areas experiencing the highest use of technologies are waste management (13%) and monitoring of quantity and quality of ground water (8%). Due to the generally low potential of using telematics applications in the field of waste management, the given response must be interpreted carefully. It is likely that respondents have based their answers on a wide interpretation of new information and communication technologies.

A closer look to the different “regions” within the CEEC shows that, with the exception of “monitoring of ground water” and “modelling of air quality”, the use of telematics in the Baltic states, especially in the field of waste management and decision support systems seems to be more advanced than in other parts of CEE.

Figure 20: Full telematics use in environment policy areas (by CEEC-region)



Nevertheless, many public authorities in the CEEC have already started to partly implement telematics applications in environmental management.

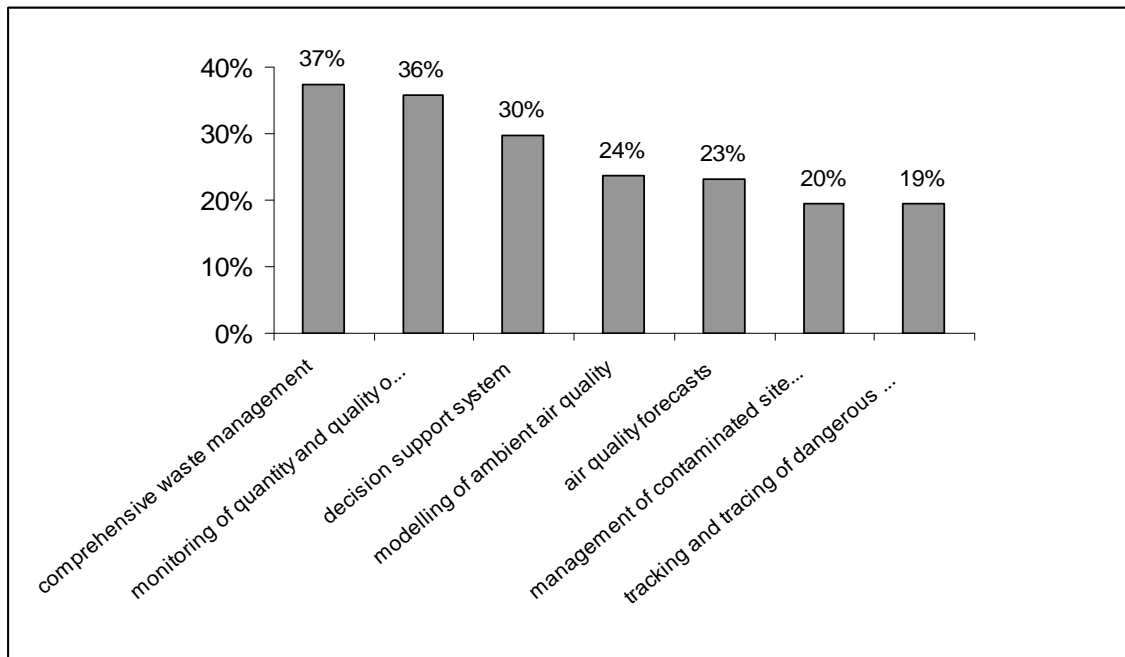
More than 35% of all authorities say that they are already partly using “information and communication technologies” for their waste management and for monitoring the quality and quantity of ground water<sup>19</sup>.

But also in other areas authorities have started to use telematics. Between 20-30% of the authorities are partly using telematics for the improvement of decision support systems (30%), for modelling of ambient air quality (24%) and for air quality forecasting (23%).

<sup>18</sup> The basis for percentages is n=139

<sup>19</sup> Again it is likely that respondents have based their answers on a wide interpretation of information and communication technologies.

Figure 21: Telematics use in environment policy areas (partly implemented)



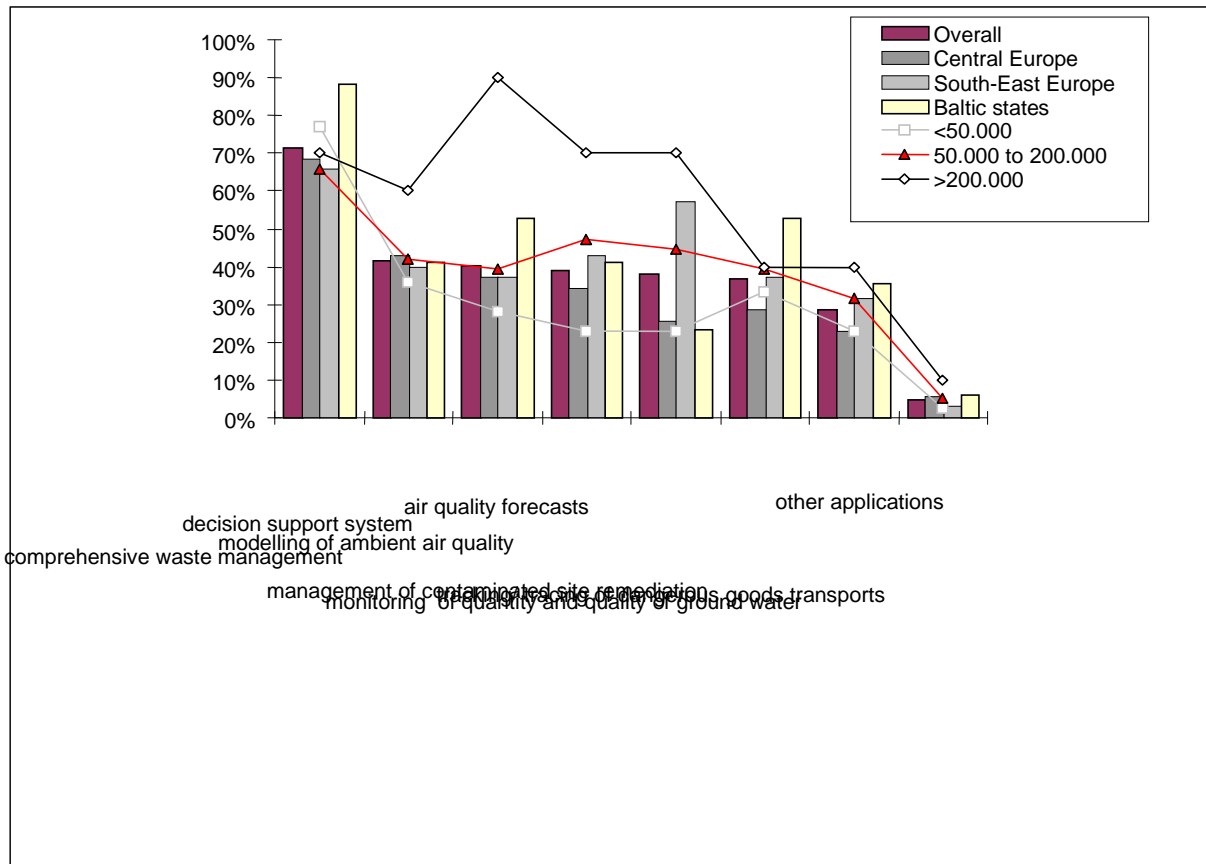
Concerning future priorities for telematics use for environmental policy areas, 71% of respondents answered that they have the intention to use telematics for the support of waste management. Other priorities for future telematics use are:

- “Decision support systems” (41%)
- “Modelling of ambient air quality” (40%)
- “Air quality forecasts” (39%).

In larger authorities however, telematics applications seem to be valued much more highly, particularly in the field of modelling and forecasting of ambient air quality, than in smaller authorities. 90% of the authorities over 200.000 inhabitants consider modelling of ambient air quality as a major application area of telematics (see figure 22).

Baltic states are particularly keen on using telematics for comprehensive waste management, modelling of ambient air quality and monitoring of ground water. South-East European authorities have a high interest of using telematics in the field of “management of contaminated site remediation”.

Figure 22: Future priorities for telematics use for environmental policy areas (by region and authority size)



## 6.5 BASIC TECHNOLOGIES

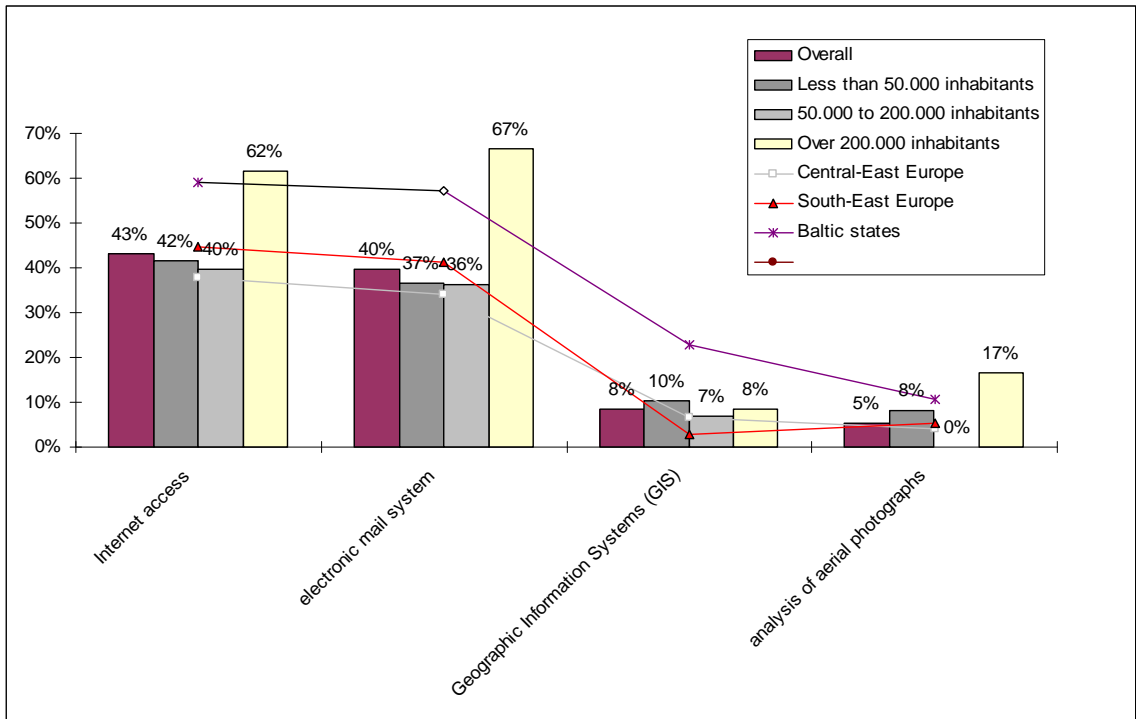
Concerning basic technologies, in about 43% of the surveyed CEEC authorities, environment departments have Internet access and 40% use e-mail systems<sup>20</sup>.

The availability of GIS, however, is not very high. Only 8% of the authorities have access to GIS and one out of twenty authorities claim to “fully” utilise aerial photography.

It can be seen in Figure 23 that the availability of technical systems seems to be much better in the Baltic states than in other CEEC authorities. The same can be said for larger authorities, where the use of technical systems, such as e-mail or Internet is much more common.

<sup>20</sup> The basis for percentages is n=137. These percentages only give some information on the general availability of the technologies, but do not reflect their actual use.

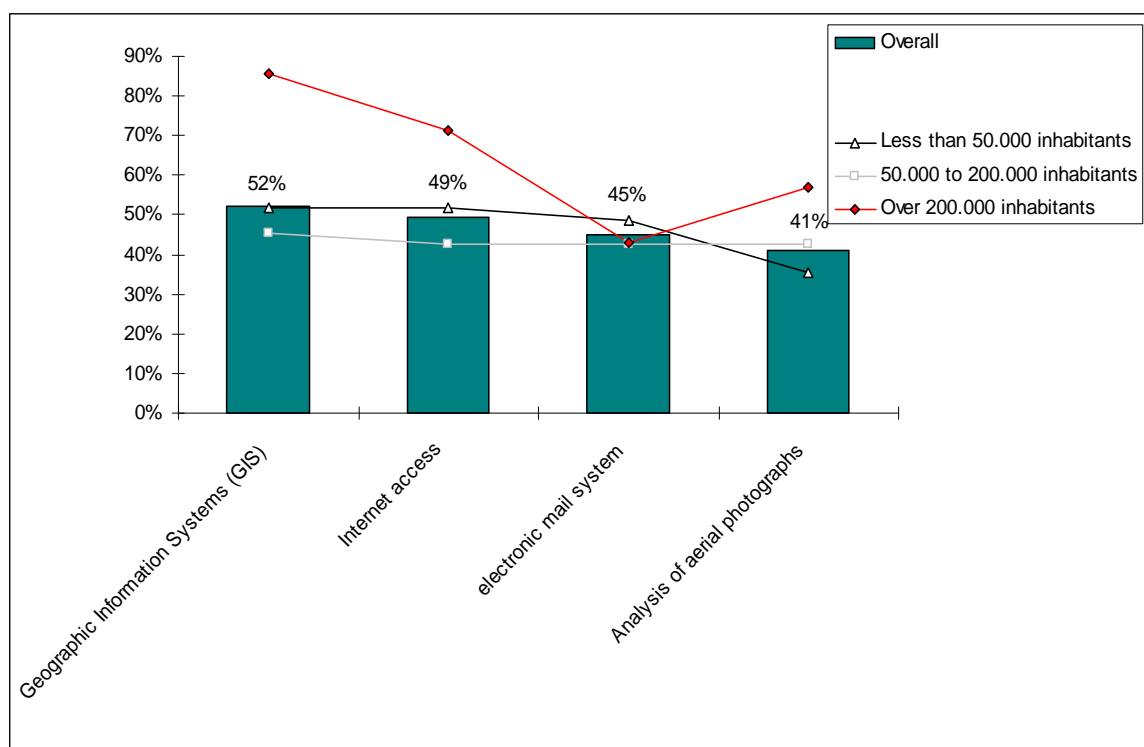
Figure 23: Basic technologies fully available to environment departments<sup>21</sup> (by region and authority size)



Even though the use of GIS and analysis of aerial photographs is not very widespread, their importance is widely appreciated and they will be growing in importance. Every second authority, according to the results in figure 24, sees the better utilisation of GIS as a priority in their future policy and more than 40% have mentioned that the analysis of aerial photography should be paid particular attention in future policies. As regards the use of e-mail and Internet, about half of the authorities believe that the use of these basic communication means will be of major importance in future policies.

<sup>21</sup> “Fully available” means that the technology is perceived to be fully used or in principle available, rather than used by all employees.

Figure 24: Future priorities for the introduction of technical systems (by authority size)



## 6.6 SUMMARY

In terms of the current use of telematics systems and other technologies, the survey revealed that:

- The use of telematics in the environment field is very limited, compared to EU authorities. However, an increasing number of authorities are already partly using new technologies.
- The full use of such technologies can mostly be found in the area of waste management (13%) and in ground water monitoring (8%).
- In EU authorities, comprehensive waste management (27%) and modelling of ambient air quality (22%) are the areas with the highest telematics support.
- The application of telematics technologies is generally more developed in large authorities, as is the interest for its more intensive use in the future.
- There is a clear will to intensify the implementation of telematics. More than 70% of the authorities would like to use telematics for “Supporting waste management”. Other priorities for telematics use are “Decision support systems”, “Modelling of ambient air quality” and “Air quality forecasts” (all around 40%).
- The general interest of implementing new environment telematics applications seems to be much higher in CEEC, since the percentages of CEEC authorities mentioning future priorities are far above those of EU authorities.
- As regards basic technologies, more than 40% of the authorities have Internet access and use e-mail systems. Technologies like GIS and aerial photography are use by less than 10%.
- Although the current use of Geographic Information Systems and analysis of aerial photographs is not very widespread, the demand for these technologies will be high in the coming years. E-mail and



Internet are also likely to be used more intensively in future.

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## 7 DELIVERY OF INFORMATION AND PUBLIC SERVICES

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The survey also examined the nature of information and services provided to the public and what kinds of media and technical platforms are being used to deliver these. These questions help to gain an overview of the current technical framework in CEEC authorities with regard to information dissemination and also the potential for the wider application of telematics systems for the delivery of environmental information.

Apparently most respondents adopted an extremely wide definition of “service”. When interpreting results in this section it can be assumed that for indicated services, information is in principle available, but may not be disseminated on a regular basis for the entire geographic area.

### 7.1 DISSEMINATION OF INFORMATION

More than four out of five authorities claimed that they disseminate general information to increase environmental awareness and information on waste reduction<sup>22</sup>. 75% of the respondents stated that their authorities provided the public with general advice on environmentally sound lifestyles and information on drinking water quality. “Air quality forecasts” seems to be the area where the provision of information services is poorest (39%).

*Figure 25: Environmental information provided to the public*

<b>1. General info to increase environmental awareness</b>	<b>85%</b>
<b>2. Info on waste reduction</b>	<b>84%</b>
<b>3. Advice on environmental sound lifestyle</b>	<b>75%</b>
<b>4. Drinking water quality</b>	<b>75%</b>
<b>5. Key local air pollutant levels</b>	<b>71%</b>
<b>6. Legislative texts regarding the environment</b>	<b>71%</b>
<b>7. Environmental impacts of large infrastructure projects</b>	<b>70%</b>
<b>8. Advice on environmental sound business practice</b>	<b>58%</b>
<b>9. Air quality forecasts</b>	<b>39%</b>

This is probably one reason why “Air quality forecasts” is seen as the area with highest priority in the field of future environment related information policy (53% of the authorities). Among priority areas were also:

- “Information to increase environmental awareness” (50%)
- “Information on waste reduction” (49%)
- “Key local air pollutant levels” (44%)

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<sup>22</sup> The basis for percentages is n=147

## 7.2 PUBLIC PARTICIPATION AND TRANSPARENCY

The vast majority of the surveyed CEEC authorities offer the possibility for the public to make suggestions to the city council (95%) and to request public documents (88%)<sup>23</sup>. Approximately four out of five authorities claimed that citizens can participate in planning processes or may order municipal services. Requesting electronic data on environmental topics was deemed possible among 43% of the authorities.

Figure 26: Delivery of public services

<b>1. Make suggestions to council/register complaints</b>	<b>95%</b>
<b>2. Request public documents</b>	<b>88%</b>
<b>3. Participate in planning process</b>	<b>80%</b>
<b>4. Order municipal services</b>	<b>77%</b>
<b>5. Request electronic data on the environment</b>	<b>43%</b>

However according to the survey it would appear that the availability of electronic data will increase, since 78% of the authorities named this area as a future policy priority. Other environment related interactive services play a secondary role in future policies. The improvement of municipal services or participation in planning processes, for example, is seen by approximately 40% as a future priority.

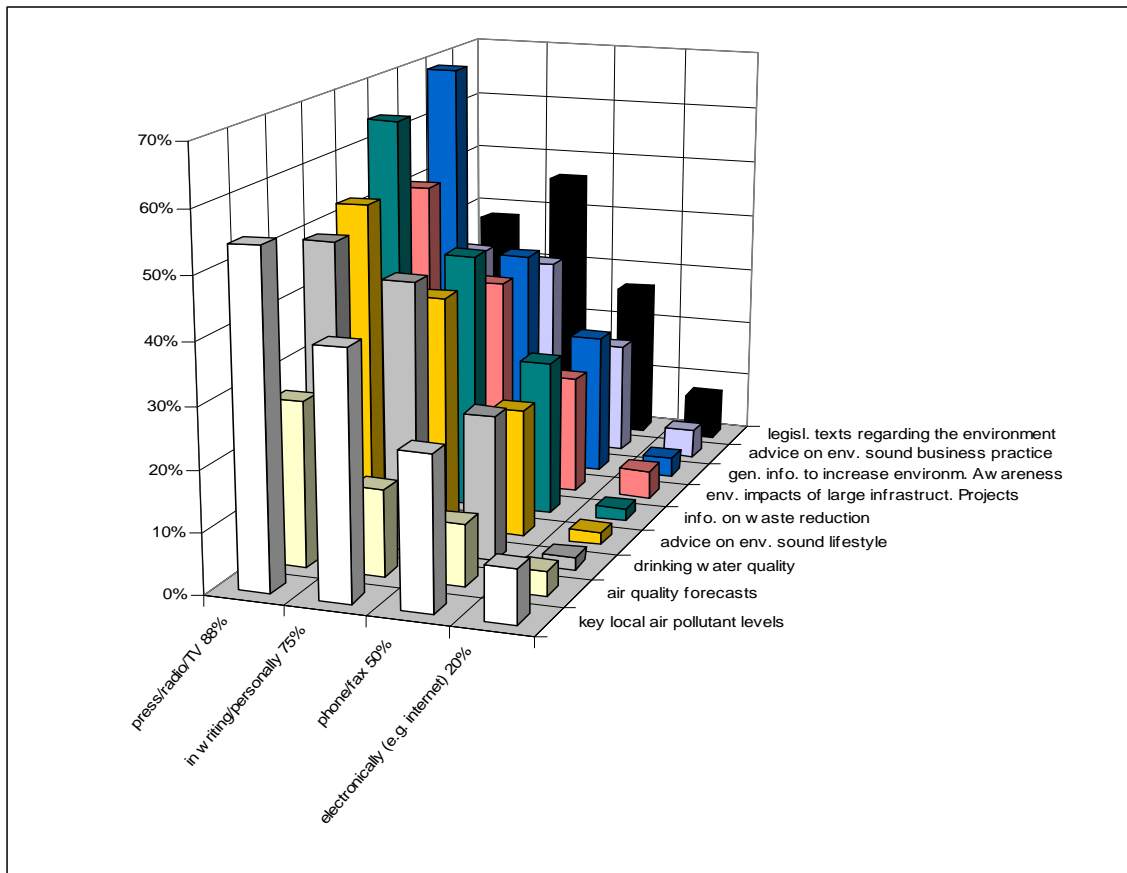
## 7.3 TECHNICAL PLATFORMS FOR INFORMATION DELIVERY

As the status of public information service provision in the CEEC is considerably different from the EU, a very wide definition of delivery “media” was chosen to cover also radio/ TV, and telephone/fax in addition to Internet.

The most common technical platforms used to disseminate information by local authorities are the local press, radio and television (TV). 88% of the authorities stated that information is disseminated via the press, radio, TV and almost 75% of the respondents announced that citizens have the possibility to get with written responses to personal requests. Half of the authorities claimed to supply environment related data by telephone/fax and 20% by e-mail or Internet (figure 27).

<sup>23</sup> The basis for percentages is n=147

Figure 27: Technical platforms for information delivery<sup>24</sup>

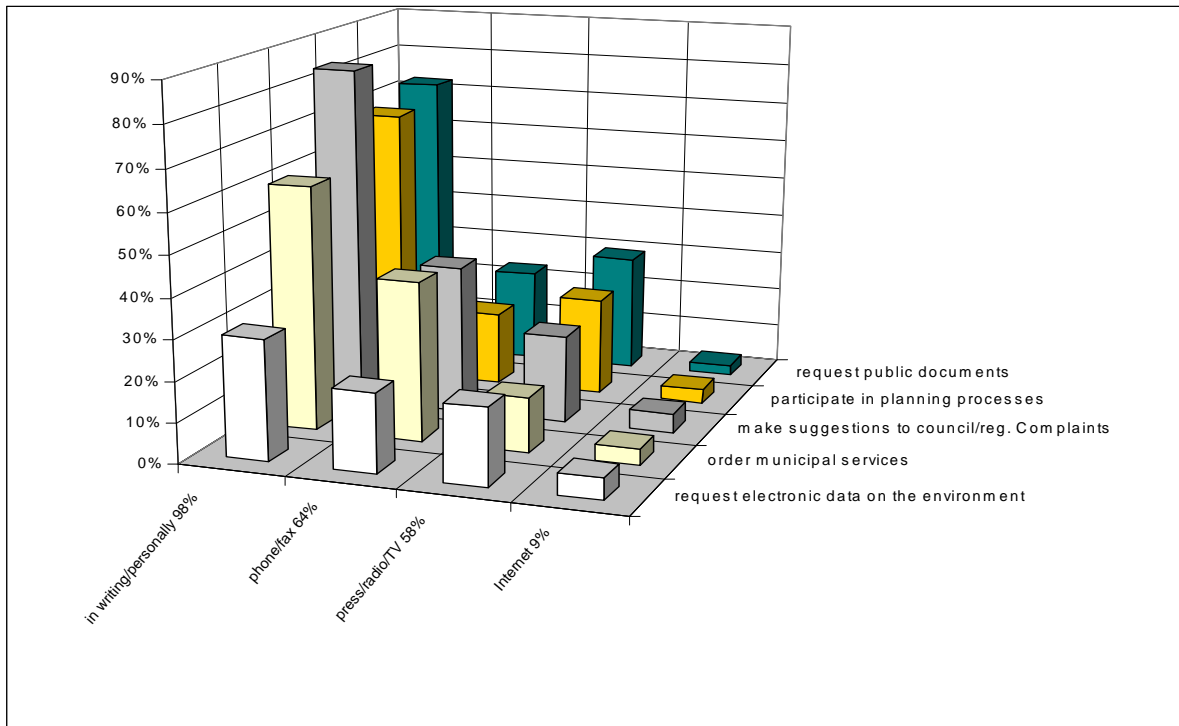


The main media for interactive services between the citizens and the public administration are writing or personal requests (98%), followed by telephone/fax (64%) and local press/radio/TV (58%).

It is important to note that the general provision of interactive services via e-mail or Internet is not yet widely used at all (9%).

<sup>24</sup>The overall percentage of the media behind the labels exceeds the percentages for the single services, since the question allowed multiple responses.

Figure 28: Technical platforms for service delivery



#### 7.4 SUMMARY

- Most of the authorities claim that their current provision of environmental information is fairly high, in particular relating to areas like “environmental awareness”, “waste reduction”, “drinking water quality”. However there is no data available as to the quality of this information.
- Information on “air quality forecasting” is disseminated in 39% of the authorities.
- Authorities intend to improve information dissemination especially in areas, where they expect the greatest demand: “Air quality forecasting”, “Waste reduction” and “General awareness raising”.
- The most common technical platforms for the delivery of environment related information are the local press, radio and TV. Half of the authorities claimed to supply environment related information by telephone/fax and 20% by e-mail or Internet.
- The right to request electronic data on environmental topics was deemed possible among 43% of the authorities. However the real use of this possibility is probably much lower.
- In only 9% of the authorities, citizens can use “interactive services” (like making suggestions to the public or participating in planning processes) via e-mail or Internet.

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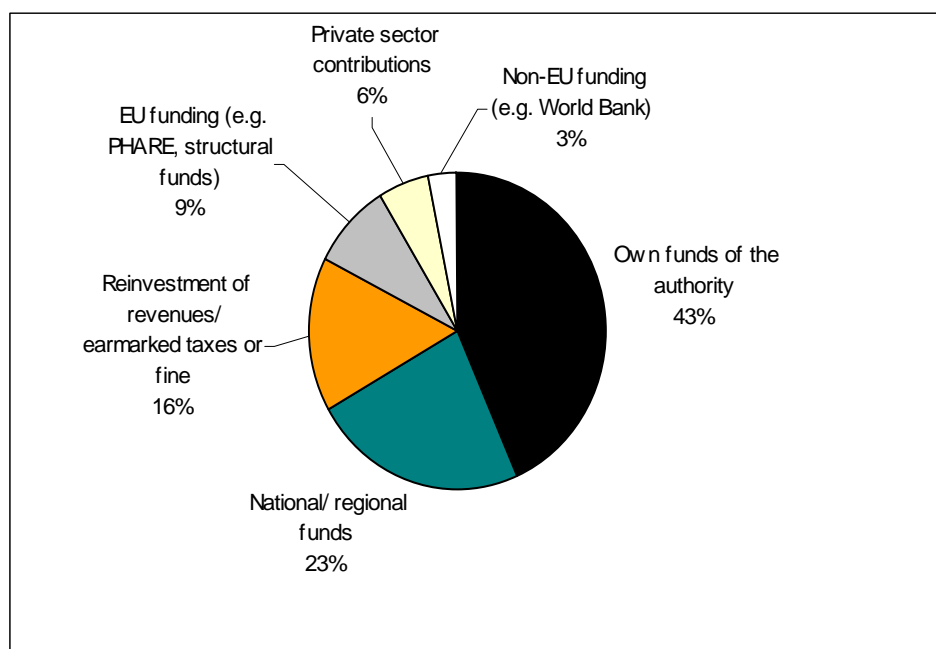
## 8 FINANCING OF ENVIRONMENT TECHNOLOGIES AND SERVICES

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The most common sources of funding, relied upon for implementing information technologies previously are generally the authority's own funds (91%), while 49% mentioned that their implementation of information and communication technologies was generally financed by national or regional funds<sup>25</sup>. One out of three authorities have to some degree financed new technology applications by "Reinvestment of revenues or earmarked taxes or fines" while 18% mentioned that the use of new technologies was supported by EU-funds.

Private sector contributions still seem to be a marginal source of funding, since only 12% of the authorities relied on private funding. The same can be said for Non-EU funding, which played an important role in only 7% of all authorities (figure 29).

Figure 29: Sources of funding




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## 9 EUROPEAN COOPERATION

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A personal opinion was solicited with regard to whether the consequences of EU-accession on the general environmental conditions in the country would be more positive than negative. It was found out that the vast majority of the respondents (80%) believe EU accession will have a positive effect on the environment. Few believe that the negative effects on the environment will be predominant<sup>26</sup>.

A close examination of those positive effects from EU-accession show that 80% of the authorities expect the enforcement of environmental legislation to become more effective and also the availability of

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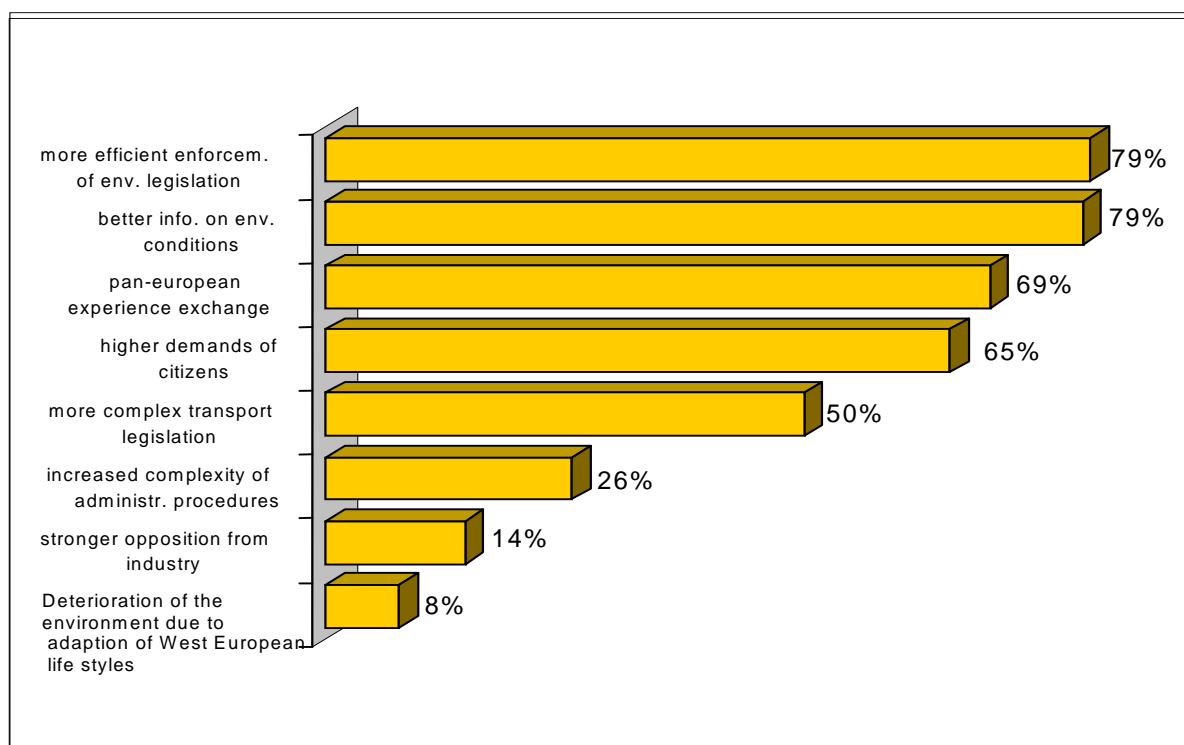
<sup>25</sup> The basis for percentages is n=147

<sup>26</sup> The basis for percentages is n=145

information on environmental conditions<sup>27</sup>. 69% believe that Pan-European experience exchanges will increase, and almost 65% suppose that the demand of citizens (e.g. for better information, services) will rise.

Possible negative effects are mainly seen in the introduction of a more complex legislation (50%) and in more complicated administrative procedures (26%). Other possible negative impacts like “stronger opposition from industry” and “deterioration of the environment due to the adoption of West European life styles” seem to be marginal.

Figure 30: Expected consequences of EU-accession for environmental policies



## 10 FUTURE INTERESTS

Specifically with respect to the conferences and workshops to be held under the auspices of the CAPE project during 1999, which aim to overview some of the most useful telematics applications in light of this survey, the interests of CEEC authorities were solicited

Decision-makers were requested to mention their future interest, in particular relating to telematics applications and technologies. In addition respondents should indicate their future interest in issues related to general issues of environmental policy.

The questions on the future interests make it possible to summarise also the major priorities with regard to future telematics applications and technologies.

<sup>27</sup> The basis for percentages is n=147

## 10.1 TELEMATICS APPLICATIONS

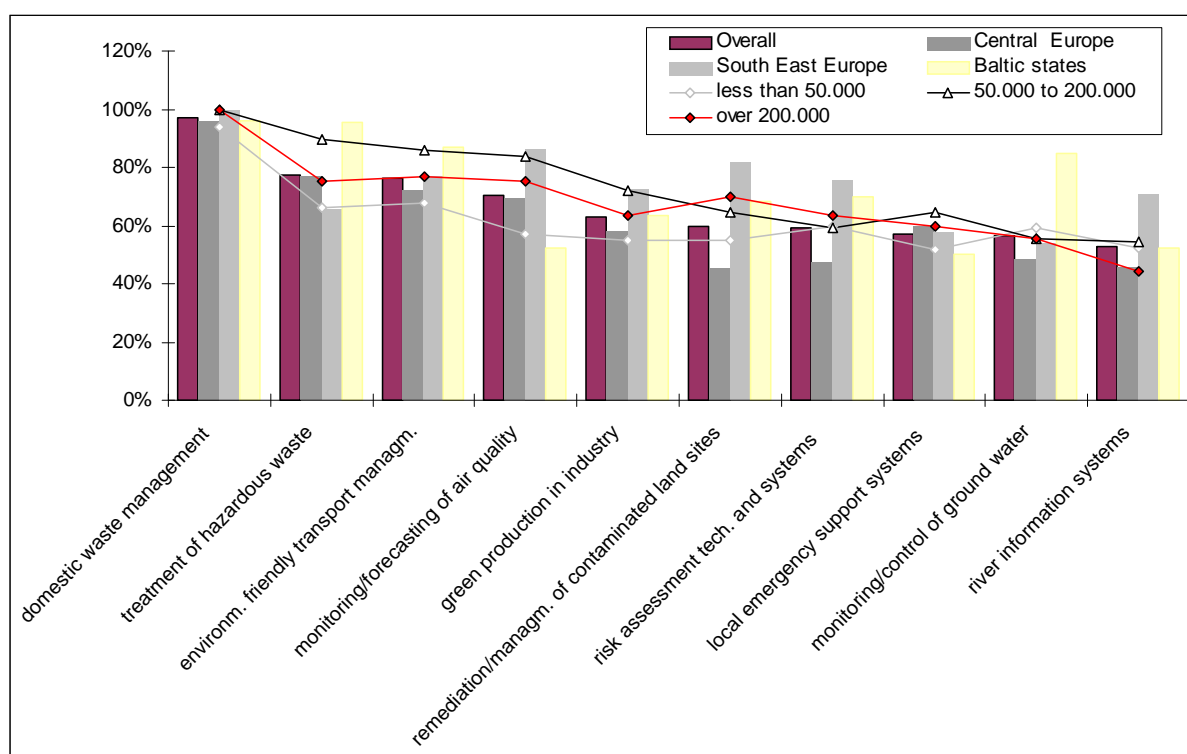
The major interest, as far as telematics applications are concerned, can be seen in the field of domestic waste management, in which almost all authorities (97%) have stated their interest<sup>28</sup>.

But also in the following areas the demand for more information seems to be very high:

- “treatment of hazardous waste” (77%)
- “environmentally friendly transport management” (76%)
- “monitoring and forecasting for ground water quality” (71%)

Authorities from the Baltic states are particularly keen on knowing more about telematics applications for supporting waste management, environmentally friendly transport management and monitoring/control of ground water. South-East European authorities have a high interest in telematics applications for “monitoring and forecasting of air quality” and “management of contaminated land sites”. “Central European” authorities generally have a lower interest in learning more about telematics applications.

Figure 31: Future interests in telematics applications (by region and authority size)



## 10.2 TECHNOLOGIES

With respect to technologies, respondents are mainly interested in knowing more about public environment information systems. 90% of the authorities stated their interest in this technology, whereas 80% would like to get more details on decision support systems<sup>29</sup>.

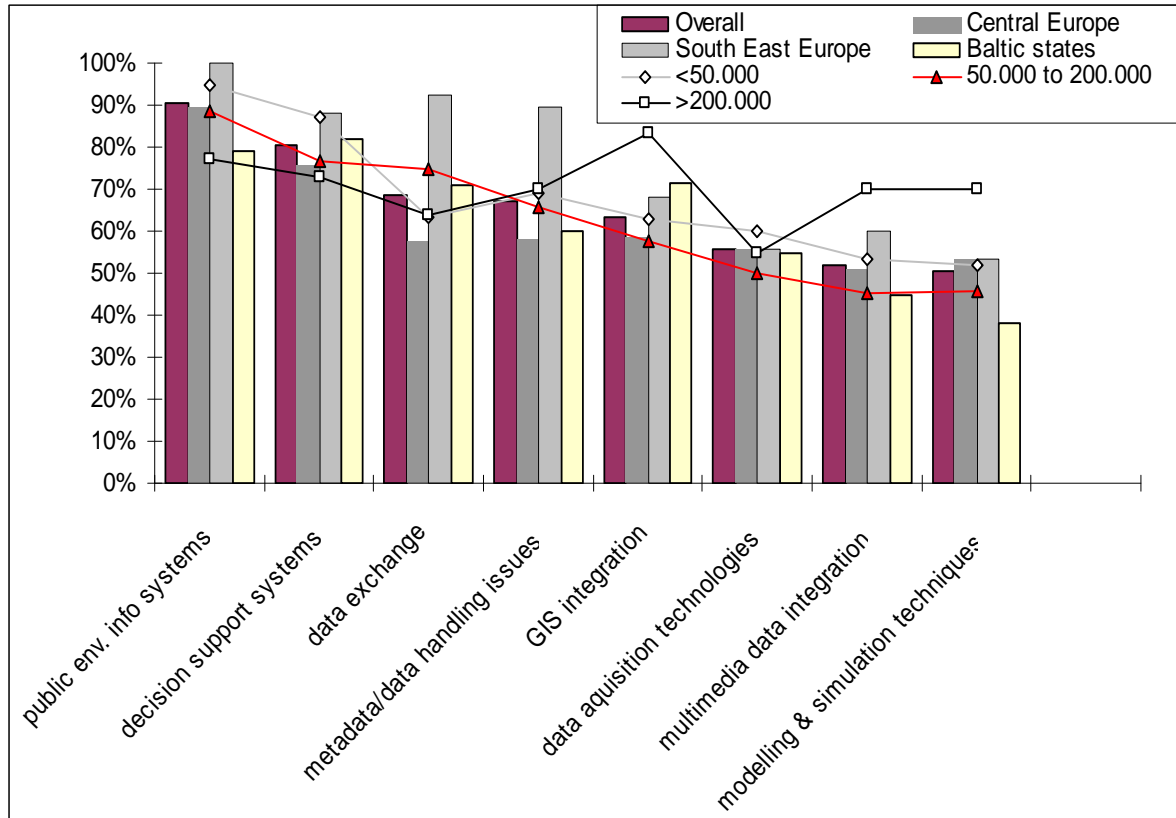
<sup>28</sup> The basis for percentages is n=147

<sup>29</sup> The basis for percentages is n=147

The next priorities as far as technologies are concerned, are:

- data exchange (69%),
- metadata/ data handling issues (67%)
- Geographical Information Systems (63%)

Figure 32: Future interests in technologies (by region and authority size)



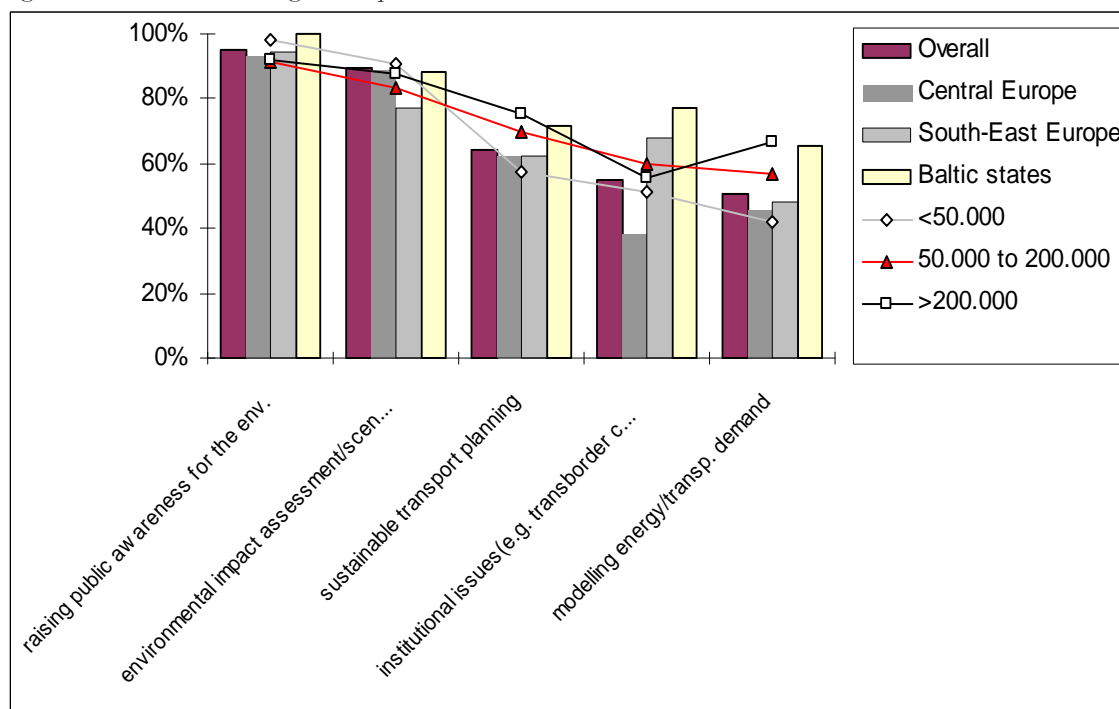
### 10.3 GENERAL INTERESTS

Looking at some of the more general issues relating to environmental management, it can be noted that in particular the interest for information related to “raising public awareness for the environment” (95%) and “environmental impact assessment” (88%) seems to be very high<sup>30</sup>.

<sup>30</sup> The basis for percentages is n=147



Figure 33: Future interests in general topics



#### 10.4 FORMATS FOR MEETINGS

In addition to conferences, respondents are particularly interested in attending targeted training sessions (81%) and technical on site visits (75%). Good practice guidelines or training manuals (69%) and staff exchange programmes also are much demanded (66%). These results confirm the approach of the CAPE-project to disseminate good practice examples and to organise conferences and workshops on telematics.

#### 10.5 SUMMARY

- The future interests on environment telematics applications are very high in CEEC authorities, even higher than in EU authorities.
- Highest interest for future telematics use is seen in the areas of “domestic waste management”, “treatment of hazardous waste”, “environmentally friendly transport management”.
- The ranking of interests in telematics applications of EU and CEEC authorities is fairly similar.
- As regards telematics technologies, CEEC authorities have a very high interest in all items. CEEC authorities are mostly interested in “public environment information systems” and “decision support systems”. “Data exchange” and “metadata/data handling issues” are other areas of particular interest.
- In addition to telematics issues, CEEC authorities have a general interest in getting more information on “raising public awareness for the environment” and “environmental impact assessment”.

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## **ANNEX I PROCEDURES FOR THE QUESTIONNAIRE SURVEY**

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- Prior to conducting the enclosed questionnaire survey, a contact database was generated. This was to include full references to some 2000 local government environment and transport liaisons and/or experts, both across the EU and CEE countries. The data was researched, selected and compiled during the summer of 1998 by the project consortium, while the survey results were compiled during November/December 1998. The methodology for this process is outlined below.

### **DATABASE CREATION**

For the mailing database, the following data was collected:

- The consortium partners from CEE countries (The Regional Environmental Center, REC (Hungary), Prague Project Institute, PPI (Czech Republic) and Gestionnaires Sans Frontières, GSF (Romania). systematically researched local and regional authority contacts on the basis of their own established communication links. This approach was considered preferable because personal contacts were i) considered key to producing comparatively high return rates and ii) CEEC public authority reference directory sources are not of comparable quality and reliability. Therefore REC, GSF and PPI selected authorities in the CEEC relying on their regional offices. In many cases contact persons were telephoned to verify contact details.
- Data for the EU countries was extracted from the European Local Government Organisation (ELGO) database. In order to complement the systematically researched data sources with randomly selected data from missing or underrepresented countries and sectors, POLIS acquired the ELGO data from Newmedia Publishing for exclusive use within the CAPE survey.

The ELGO database is the only available systematic source of local and regional government information covering Europe. ELGO includes full contact information and population figures from all layers of local and regional government in all European countries. For the CEEC surveys, POLIS acquired the following data:

- Chief Executive Officers in authorities with between 20,000 and less than 100,000 inhabitants for all CEEC countries.
- Responsible officers in environment and transport departments of authorities responsible for populations above 100,000 for all EU and CEEC countries.

### **SELECTION PROCESS**

When establishing the mailing database, the following criteria were defined:

- Contact research was primarily based on direct and personal contacts with local authorities. National contact points were used to confirm names and contact details of representatives.
- All data systematically researched by project consortium members had preference over any data from ELGO as it was considered to be of higher quality and reliability.
- Target numbers for local authorities in all countries were established in order to ensure representativeness in terms of country size and authority size distribution within countries.
- The mailing focused on larger and medium sized authorities, since small authorities were considered less likely to have sufficient financial resources, responsibility and other means for implementing telematics systems.

- The mailing database should be representative for all layers of local and regional level in order to allow general conclusions and internal distribution between large and small authorities in each country.

To meet the requirement of representativeness, approximate target numbers for each country were determined by the relative share of population for each country in relation to overall CEEC/EU population.

For the selection of contacts for the mailing database, two approaches were chosen:

- Project partner representatives selected roughly the targeted amount on the basis of their own specific local knowledge of typical authorities. Target numbers could be reasonably well met. The result is although not strictly a random sample in the scientific sense, nonetheless considered a fair and representative selection of authorities in each country.
- Data from the ELGO database was added. A random sample was drawn for CEEC transport contacts where only an insufficient number of contacts could be made available. The resulting ELGO mailing database contained a randomly selected “stratified sample” of local and regional authorities. It can be considered representative of all levels of local government institutions in all CEE countries.

### **MAILING AND DATA ENTRY**

Rupprecht Consult (RC) provided an English version of the questionnaire and consortium members provided national language versions on that basis. For the CEEC it was considered essential to translate into all 10 languages. All translations were prepared/proof-read by native speakers. Partners were advised to pay special attention to producing identical layouts of questionnaires.

The burden of mailing was split within the consortium. The questionnaires were accompanied by a cover letter introducing the CAPE project and the benefits of participating in the survey. Questionnaires were sent out in September/October 1998.

A Microsoft ACCESS-data entry mask was supplied by RC. Data entry was performed by REC, GSF and PPU and finished in November 98.

## ANNEX II SURVEY RESPONSE AND REPRESENTATIVENESS

From mailing 556 questionnaires for the CAPE survey on environment telematics in authorities from Central and Eastern Europe, 147 responses were returned. Figure 34 indicates that the response rate for the CEEC Environment survey was more than 26%. This is considerably higher than for comparable surveys and was above the optimistic target of 20%. The return rates vary between 45,5% in Lithuania and 21% in Romania. Looking at the geographical dispersion of the responding authorities, approximately 54% of all responses came from Poland, Czech Republic, Slovak Republic, Hungary, hereafter defined as Central European countries, with Polish authorities representing 27% of all the questionnaires received. 28% of the responses were returned from authorities in South-East European states defined as Bulgaria, Romania, Slovenia and 18% from the Baltic states defined as Estonia, Latvia, Lithuania.

1<sup>st</sup> wave accession countries (Poland, Hungary, Czech Republic, Estonia, Slovenia) are represented by 53% of the responses.

Figure 34: Sample size and response rate

Country	Sent	Received	% of Received
Bulgaria	46	15	32,6%
Czech Rep.	61	16	26,2%
Estonia	11	3	27,3%
Hungary	50	16	32,0%
Latvia	14	3	21,4%
Lithuania	44	20	45,5%
Poland	183	40	21,9%
Romania	105	22	21,0%
Slovak Rep.	28	8	28,6%
Slovenia	14	4	28,6%
<b>Total</b>	<b>556</b>	<b>147</b>	<b>26,4%</b>

Figure 35: Sample size

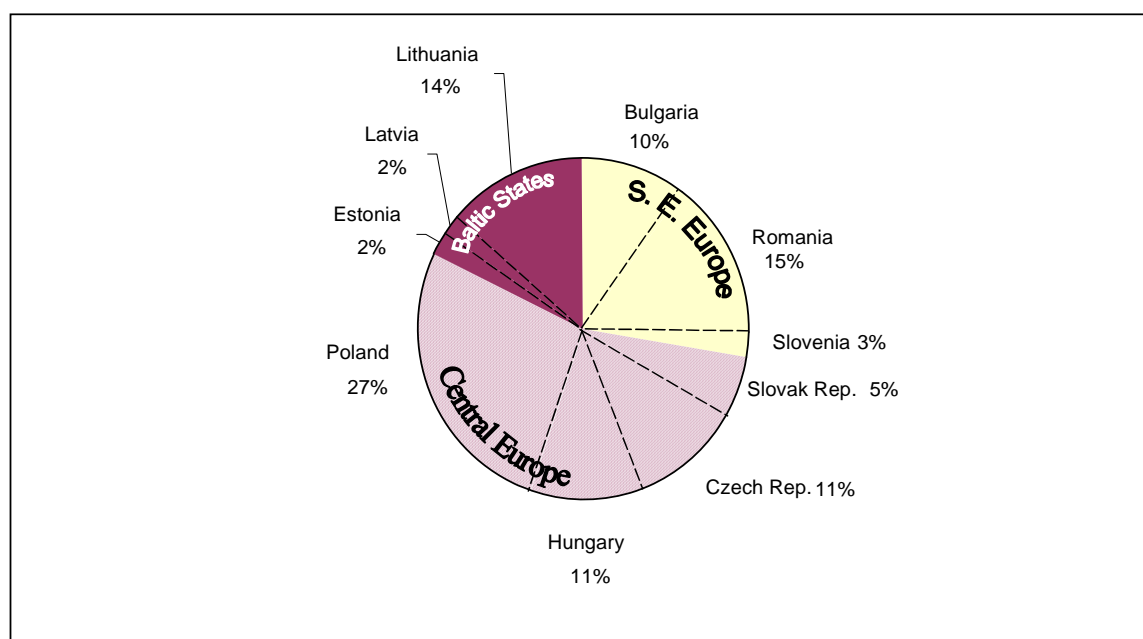
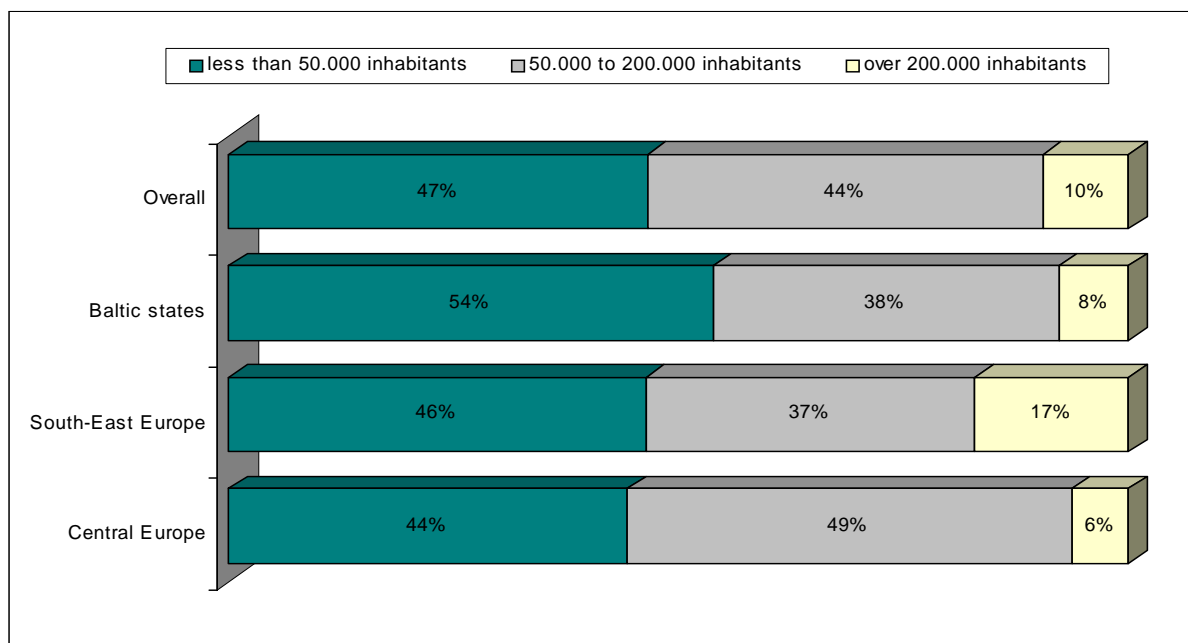


Figure 36 clearly shows that the percentage of small authorities with less than 50.000 inhabitants having participated in the survey is relatively high. It seems that accession countries have clearly begun to devolve administrative responsibility to the local authority level. Almost 20% of the surveyed authorities have less than 25.000 inhabitants and in about 47% of the authorities the number of population does not exceed 50.000. The share of medium-sized authorities with a population between 50.000 and 200.000 is about 44%. Large authorities with more than 200.000 are represented by approximately 10% of all responses.

Figure 36: Size of authorities in the sample (by region)



A comparison of the survey sample with the ELGO database<sup>31</sup> makes clear, that the survey results are representative. Referring to the total population of South-East European states (related to the overall CEEC population), South-East Europe is well represented in the survey sample. The same is true for Central European states. Baltic states are somewhat over-represented, due to high response rates, especially from Lithuania. The population of Latvia, however, is underrepresented. For the region of South-East Europe and Central Europe, the representation of the states in the survey is well balanced, except for Poland. In relation to the total population, Poland is not well represented, explained by the response rate which is below average.

With respect to the representation of city size segments, it turns out that in most states the different city sizes are well balanced<sup>32</sup>. In Estonia, Latvia and Czech Republic responses from large authorities of more than 200.000 inhabitants were not received. In Estonia, the capital Tallinn did not respond. In Latvia, only small authorities of less than 50.000 inhabitants participated in the survey. For the sample of Czech Republic its three largest cities are not included.

<sup>31</sup> For more explanations on the ELGO database see Annex I.

<sup>32</sup> Due to the lack of any data reference source, the authority size distribution in the ELGO database is used.

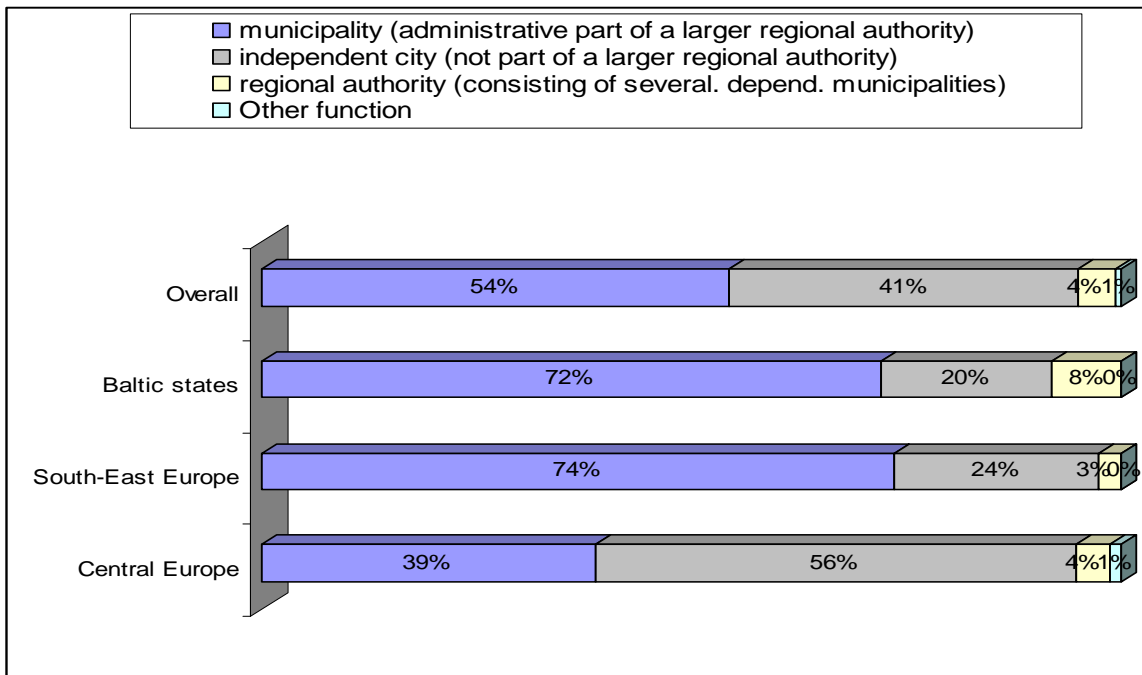
Figure 37: Representativeness of the survey sample <sup>33</sup>

		ELGO-Database		Mailing		Survey Sample		Total Population in % of CEEC overall		Share of authorities in sample (overall)
		Number of cities	Mean Population	Number of cities	Response Rate	Number of cities	Mean Population	actual	in sample	
<b>Baltic States</b>										
<b>Estonia</b>	small (below 50.000)	2	21.387			1	18.000			1%
	medium to large (50 - 200.000)	4	73.260			2	75.500			3%
	large (200000+)	1	442.679			0				0%
	<b>Total</b>	<b>7</b>	<b>111.213</b>	<b>11</b>	<b>27%</b>	<b>3</b>	<b>56.333</b>	<b>1%</b>	<b>1%</b>	<b>2%</b>
<b>Latvia</b>	small (below 50.000)	17	36.961			3	19.042			4%
	medium to large (50 - 200.000)	12	74.492			0				0%
	large (200000+)	1	839.670			0				0%
	<b>Total</b>	<b>30</b>	<b>78.730</b>	<b>14</b>	<b>21%</b>	<b>3</b>	<b>19.042</b>	<b>2%</b>	<b>0%</b>	<b>2%</b>
<b>Lithuania</b>	small (below 50.000)	32	35.719			10	35.512			15%
	medium to large (50 - 200.000)	20	70.950			8	72.450			13%
	large (200000+)	3	398.992			2	333.400			14%
	<b>Total</b>	<b>55</b>	<b>68.345</b>	<b>44</b>	<b>45%</b>	<b>20</b>	<b>80.076</b>	<b>4%</b>	<b>9%</b>	<b>14%</b>
<b>Central Europe</b>										
<b>Poland</b>	small (below 50.000)	132	30.254			16	32.566			24%
	medium to large (50 - 200.000)	74	87.305			20	102.850			31%
	large (200000+)	20	436.868			3	504.000			21%
	<b>Total</b>	<b>226</b>	<b>84.918</b>	<b>183</b>	<b>21%</b>	<b>39</b>	<b>106.776</b>	<b>37%</b>	<b>23%</b>	<b>27%</b>
<b>Czech Rep.</b>	small (below 50.000)	50	30.361			10	25.960			15%
	medium to large (50 - 200.000)	29	83.570			6	75.099			9%
	large (200000+)	3	641.027			0				0%
	<b>Total</b>	<b>82</b>	<b>71.520</b>	<b>61</b>	<b>26%</b>	<b>16</b>	<b>44.387</b>	<b>10%</b>	<b>4%</b>	<b>11%</b>
<b>Slovakia</b>	small (below 50.000)	29	29.460			2	22.050			3%
	medium to large (50 - 200.000)	10	76.726			4	77.764			6%
	large (200000+)	1	452.053			2	346.144			14%
	<b>Total</b>	<b>40</b>	<b>51.841</b>	<b>28</b>	<b>29%</b>	<b>8</b>	<b>130.930</b>	<b>5%</b>	<b>6%</b>	<b>5%</b>
<b>Hungary</b>	small (below 50.000)	43	30.617			7	27.893			10%
	medium to large (50 - 200.000)	40	91.601			9	107.404			14%
	large (200000+)	21	503.911			0				0%
	<b>Total</b>	<b>104</b>	<b>149.642</b>	<b>50</b>	<b>32%</b>	<b>16</b>	<b>75.600</b>	<b>10%</b>	<b>7%</b>	<b>11%</b>
<b>South-East Europe</b>										
<b>Romania</b>	small (below 50.000)	30	36.926			11	32.071			16%
	medium to large (50 - 200.000)	35	97.184			8	123.413			13%
	large (200000+)	59	476.314			3	321.166			21%
	<b>Total</b>	<b>124</b>	<b>262.998</b>	<b>105</b>	<b>21%</b>	<b>22</b>	<b>104.709</b>	<b>21%</b>	<b>13%</b>	<b>15%</b>
<b>Bulgaria</b>	small (below 50.000)	58	29.536			7	24.687			10%
	medium to large (50 - 200.000)	31	88.288			5	92.537			8%
	large (200000+)	5	456.355			3	474.120			21%
	<b>Total</b>	<b>94</b>	<b>71.614</b>	<b>46</b>	<b>33%</b>	<b>15</b>	<b>137.190</b>	<b>8%</b>	<b>12%</b>	<b>10%</b>
<b>Slovenia</b>	small (below 50.000)	12	30.590			1	13.000			1%
	medium to large (50 - 200.000)	5	67.797			2	90.050			3%
	large (200000+)	1	270.330			1	256.000			7%
	<b>Total</b>	<b>18</b>	<b>54.244</b>	<b>14</b>	<b>29%</b>	<b>4</b>	<b>112.275</b>	<b>2%</b>	<b>3%</b>	<b>3%</b>
<b>Overall</b>	small (below 50.000)	405	31.320			68	29.218			
	medium to large (50 - 200.000)	260	86.149			64	96.031			
	large (200000+)	115	476.770			14	393.782			
	<b>Total</b>	<b>780</b>	<b>115.271</b>	<b>556</b>	<b>26%</b>	<b>146</b>	<b>121.372</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

The vast majority of questionnaires were answered by local authorities. More than half of all responses (52%) came from municipalities forming administrative parts of a larger regional authority. 38% of the questionnaires were sent back by independent authorities. The percentage of regional authorities having responded in this survey is very small. Only 4% of all questionnaires came from regional authorities, consisting of several dependent municipalities (see figure 38).

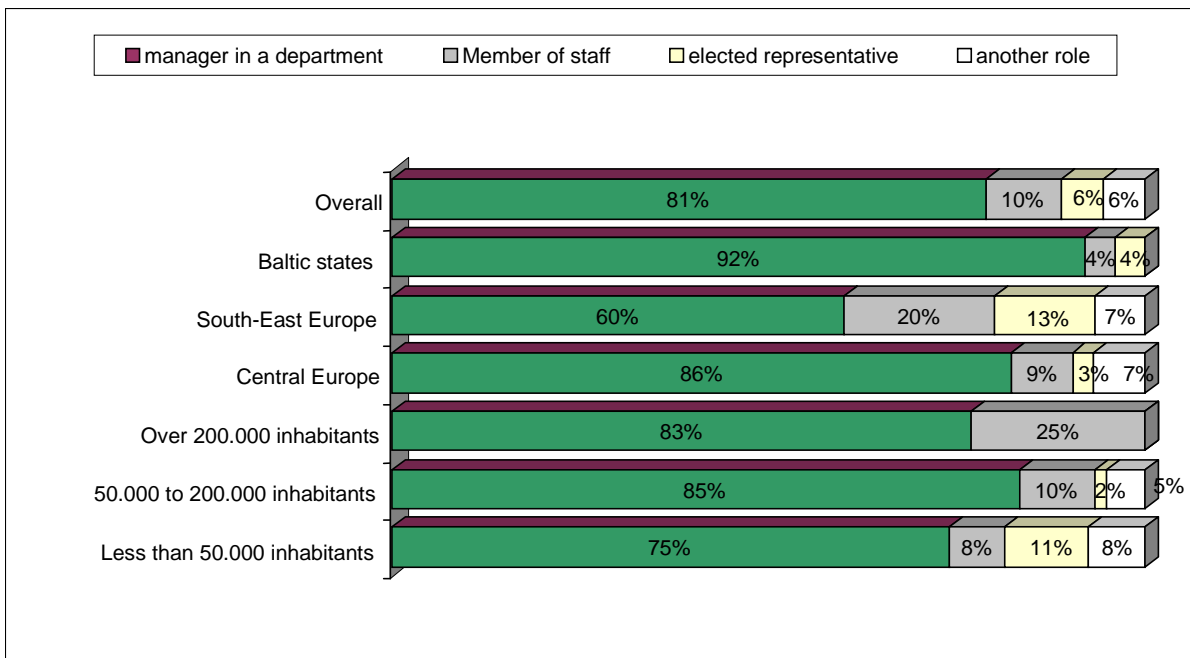
<sup>33</sup> Figures of the ELGO database on the number of medium-sized and large authorities are grossly misleading, because they include regional authorities, which were excluded for the CAPE survey.

Figure 38 : Institutional function of the authorities in the sample (by region)



Four out of five respondents belonged to authority administrations (figure 39). Most of these civil servants are responsible for environmental issues. Another 10% are members of staff directly responsible to the mayor or chief executive and only 5% are elected representatives.

Figure 39 : Role of persons having responded (by region and authority size)



## **SUMMARY**

In all, the response of the CAPE survey on Environment telematics in CEEC authorities can be regarded as:

- Representative in geographical terms. Referring to the total population size of CEE countries, Latvia and Poland are underrepresented in the survey.
- Well balanced in terms of authority size. Only in the Czech Republic, Latvia and Estonia are larger authorities missing from the survey.
- Acceptable in terms of role of respondents (i.e. mainly technical rather than political decision makers), and in terms of the institutional function of the responding authorities.



## ANNEX III QUESTIONNAIRE ON ENVIRONMENT TELEMATICS IN CEEC

### CAPE-PROJECT

#### SURVEY ON ENVIRONMENTAL MANAGEMENT IN CENTRAL EUROPEAN CITIES AND REGIONS: 1000 decision makers state their priorities!

Please take a few minutes to complete this questionnaire which will help us to understand your authority better, the range of environmental problems you currently face, and your use of information and communication technology.

**Please respond by \_\_\_\_\_ and return the completed questionnaire to the following address:**

**or fax to:**

#### Background information on your area and organisation.

##### 1. Please give the following basic information for your city (or region)!

Name of authority:<sup>34</sup> ..... Country: .....

Institutional function of your organisation?  Tick *the most appropriate* box, please!

- an independent city (not subject to a larger regional authority)
- a regional authority (containing several dependent municipalities)
- a municipality (administratively subject to a larger regional authority)
- Other function ..... (✎ Please specify).

Population of city (or region)<sup>35</sup>: ..... (✎ Please specify).

##### 2. Please provide some information on your organisation! ✎ Estimate the following figures, please:

Number of employees (white collar only) ..... (✎ Please specify).

What is your organisation's total projected expenditure this year? ca. .... currency: .....

##### 3. What is your role or primary responsibility in your organisation? Tick only *the most appropriate* box, please!

- I am a **manager** or expert in the department which is responsible for ...
  - Environmental issues
  - Technical services/ information technology
  - Economic development/ urban regeneration
  - Other department ..... (✎ Please specify).
- Public health
- International affairs
- Building/ town planning/ architecture
- I am a member of **staff** directly responsible to the mayor, chief executive etc.
- I am an **elected** representative (e.g. mayor, councillor, chief executive)
- I have **another** role ..... (✎ Please specify).

#### Some facts on the state of the environment

##### 4. How would you rate the use of installations for filtering dust and gaseous emissions among the main polluters (e.g. in industry and central heat generating stations)? Tick *one* box, please!

- filtering is not extensively used
- between one third and two thirds of all plants
- almost all plants have it

<sup>34</sup> If you prefer you can answer anonymously.

<sup>35</sup> **Please note:** Urban authorities please answer for your own authority's urban geographic area. Regional authorities please answer for your authority's entire area of responsibility.

5. Were there any critical air quality levels breached during the last 12 months (i.e. the responsible authority was legally obliged to inform the public)?  Tick one box, please!

- No
- Yes, on ..... days. (✎ Estimate a figure, please!)

6. What is the percentage of households connected to a sewage treatment system in your city (or region)?

ca. ....% (✎ Estimate a figure, please!)

7. Were there any incidents of insufficient drinking water quality during the last 12 months (i.e. the responsible authority was legally obliged to take immediate action)?  Tick one box, please!

- No
- Yes, on ..... occasions. (✎ Estimate a figure, please!)

8. What was the annual increase/ decrease in domestic waste in your city (or region) in 1996/97?

increase 1996 ca. + ..... % OR: decrease 1996 ca. - ..... % (✎ Estimate a figure, please!)

increase 1997 ca. + ..... % OR: decrease 1997 ca. - ..... % (✎ Estimate a figure, please!)

9. What proportion of domestic waste in your city (or region) is ...? (✎ Estimate approximate figures, please!)

- land filled: ca. ....%
- incinerated: ca. ....%
- recycled/ composted: ca. ....%
- not collected: ca. ....%

**Key environmental problems and policy areas**

10. What do you feel are currently the three largest problems related to the environment in your own city or region (in order of priority)? ✎ Please give a few keywords!

Our most pressing problem is: .....

Our 2nd most pressing problem is: .....

Our 3rd most pressing problem is: .....

11. This is a list of some common environmental problems. How is your authority dealing with these?

Tick all applicable boxes for each area, please!

	This is <b>not</b> an important problem for us at the moment.	This is an <b>important</b> problem, which ... we can <b>solve</b> in the <b>next 3 years</b> .	... will take <b>many years</b> to be solved.	This will be a <b>priority area</b> in future policies.
<b>low air quality</b> due to pollution from:				
<b>traffic</b> emissions .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>heat generating</b> stations .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>domestic heating</b> .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>industrial</b> production .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>noise pollution</b> .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
lack of high quality <b>drinking water</b> due to:				
<b>surface water</b> pollution .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>ground water</b> contamination .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
lack of drinking water <b>purification</b> .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
treatment of <b>sludge</b> from waste water plants .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
disposal of <b>hazardous waste</b> .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
rising levels of <b>domestic waste</b> .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>illegal waste dumping</b> .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
waste from <b>heavy industry</b> .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
treatment of <b>hospital waste</b> .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>contaminated soil</b> (e.g. from industrial sites) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
destruction of <b>natural habitats</b> .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>industrial accidents/ emergencies</b> .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>natural disasters</b> (e.g. floods) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>other</b> (✎) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>other</b> (✎) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Are there policies in operation in the following areas in your city/ region ?  Tick one box for each area, please!

	Yes	No, but planned	No (not planned)
reduction of <b>traffic emissions</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
control/ reduction of <b>industrial pollution</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
increasing levels of <b>sewage water treatment</b> --	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
promotion of <b>waste reduction</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
support to <b>waste recycling</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
remedy of <b>contaminated land sites</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
protection of <b>natural habitats</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. How would you personally judge the efficiency of your authority's environmental policies?  Tick one box for each area, please!

- We have made **little progress** over the last 3 years.
- We have been dealing with **some effects only** and have not addressed the real problems.
- We have made **slow progress** but we are going in the right direction.
- We have been **successful** in improving environmental conditions in most key areas.

**Impact and relevance of technology**

14. What do you personally believe the impact of information and communication technologies might be in the next 2 - 3 years?  Tick one box for each area, please!

The impact will be ...	Low (i.e. no or very little actual change)	moderate (i.e. some benefits are expected)	significant (i.e. major improvements will be achieved)
... in these areas ...			
reducing <b>air pollution</b> and <b>green house gases</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
reducing <b>noise pollution</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
reducing negative <b>effects of transport</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
safeguarding sufficient supply of <b>drinking water</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving <b>waste management</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
preventing <b>soil pollution</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
using <b>natural resources/ energy</b> more rationally -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
preventing or better managing <b>emergencies</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
protecting <b>bio-diversity</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
facilitating <b>cleaner production in industry</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
enforcing <b>environmental legislation</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
improving internal <b>education and training</b> opportunities -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
better/ more effective <b>decision making</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
enhancing <b>public awareness</b> of environmental issues -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


**Internal use of telematics systems.**

15. Which data for your city (or region) do you have direct access to ?  Tick one box per area and tick whether this is a priority in the future, please!<sup>36</sup>


	data sufficiently available	data incomplete	data not available	This will be a priority area in future policies.
main pollutants of: <b>air</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>drinking water</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>surface water</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>hazardous waste deposits</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>large industrial polluters</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>non-point sources of pollution</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>traffic noise data</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>meteorological conditions</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>traffic flows</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>natural resources/ habitats</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>land use/ land cover</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>energy consumption</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>environmental legislation</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other data (✎) -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other data (✎) -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<sup>36</sup> Please include also data made available by other organisations for your own area!

**16. What technologies do you have available for handling and analysing data?**  Tick one box per area and tick whether this is a priority in the future, please!

	Technology sufficiently available	technology support incomplete	technology not available	This will be a priority area in future policies.
use of electronic <b>data bases</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
integrated or linked electronic <b>data bases</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
integration of <b>archival records</b> of past states -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
<b>data exchange network</b> with other institutions -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
<b>visualisation</b> of data in maps/graphics -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
other (  ) -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>

**17. In your area, are information and communication technologies used for the following applications?**  Tick one box per area and tick whether this is a priority in the future, please!

	fully technology supported	partly supported/ on a trial basis only	not available	This will be a priority area in future policies.
modelling of <b>ambient air quality</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
<b>air quality forecasts</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
monitoring of quantity and quality of <b>ground water</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
management of <b>contaminated site</b> remediation -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
comprehensive <b>waste management</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
<b>decision support system</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
tracking and tracing of <b>dangerous goods transports</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
other (  ) -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>

**18. Which other technical systems are available within the environment dept. of your authority?**  Tick one box per area and tick whether this is a priority in the future, please!



	fully available	partly available on a trial basis only	not available	This will be a priority area in future policies.
<b>electronic mail system</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
<b>Internet access</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
<b>Geographic Information Systems (GIS)</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
analysis of <b>aerial photographs</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>

**19. How would you rate your personal level of expertise in applying modern technology in the area of the environment?**  Tick one box only, please!

- I am aware of all concepts of practical relevance.
- I have a good understanding of some key areas.
- I know some basic concepts.
- I have too little or no knowledge of environmental technology.

**Delivery of public services/ and external communication.**

**20. What information and services does your authority provide to the public? And which technical platform are you using to deliver them?**  Tick all relevant boxes for each item, please!

Our citizens can get the following information or services:	in writing/ personally	by telephone/ fax	through local press radio/ TV	electronically (e.g. Internet)	This will be a priority area in future policies.
key <b>local air pollutant</b> levels -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
<b>air quality forecasts</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
<b>drinking water</b> quality -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
advice on environmentally sound <b>lifestyle</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
information on <b>waste reduction</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
env. impacts of large infrastructure projects -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
general info to increase <b>environmental awareness</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
advice on environmentally sound <b>business practice</b> -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
<b>legislative texts</b> regarding the environment -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
other (  ) -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>
other (  ) -----	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	----- <input type="checkbox"/>

Our citizens have access to the following services:	in writing/ personally	by telephone/ fax	through local press radio/ TV	electronically (e.g. Internet)	This will be a priority area in future policies
Request electronic data on the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
order municipal services (e.g. collection of toxic waste)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
make suggestions to council/ register complaints	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
participate in planning processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
request public documents (e.g. environmental reports)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other (✍)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other (✍)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Expected benefits and obstacles of using modern technologies.**

**21. What are the 5 major benefits that you expect from using information and communication technologies in the area of the environment?**

✍ Please rank the 5 crucial issues in the order of importance (1 = highest ... 5 = lowest)!

**Rank**

- ..... greater **cost efficiency**
- ..... improved **internal communication / work flow**
- ..... better **cooperation** with other institutions
- ..... improved **planning/ decision-making**
- ..... higher rate of **enforcement of regulations**
- ..... generally higher **quality** of public services
- ..... better **access** for citizens to environmental information/ more “transparency”
- ..... improved outside **image** of authority
- ..... better **technical integration**
- ..... greater/ improved **awareness** of environmental issues
- ..... others ..... (✍ Please specify).

**22. What are the 5 major obstacles that you face in using information and communication technologies in the area of the environment?**

✍ Please rank the 5 crucial issues in the order of importance (1 = highest ... 5 = lowest)!

**Rank**

- ..... insufficient **public funds**
- ..... **legal** problems
- ..... problems of **institutional/ interdepartmental cooperation**
- ..... difficulty in supplying up-to-date and relevant **information**
- ..... lack of **awareness** of services on the part of citizens
- ..... **technical problems**
- ..... **complexity** of new services
- ..... **opposition** from polluters/ lobby groups
- ..... lack of **political** support
- ..... lack of **qualified staff**
- ..... others ..... (✍ Please specify).

**Financing of environment technology and services.**

**23. How much is your organisation planning to spend this year on environment-related information and communication technology infrastructure, equipment, software, etc. (excluding internal costs and training)?**

✍ Please give an approximate figure! ..... currency: .....

**24. Which are the 3 main sources of funding your authority has mainly used in implementing new technologies in the past?**

Tick the 3 most relevant boxes, please!

- |  |   |
|--|---|
| <input type="checkbox"/> National/ regional funds                  | <input type="checkbox"/> Non-EU funding (e.g. World Bank)                   |
| <input type="checkbox"/> Own funds of the authority                | <input type="checkbox"/> Reinvestment of revenues/ earmarked taxes or fines |
| <input type="checkbox"/> EU funding (e.g. PHARE, Structural Funds) | <input type="checkbox"/> Private sector contributions                       |

**Consequences of European integration**

**25. What do you personally feel are the consequences of EU-accession for your country in dealing with environmental problems? Please tick all appropriate boxes**


- |  |  |
|--|--|
| <input type="checkbox"/> more complex legislation  | <input type="checkbox"/> more efficient enforcement of environmental legislation       |
| <input type="checkbox"/> increased complexity of admin. procedures   | <input type="checkbox"/> better information on environmental conditions                |
| <input type="checkbox"/> stronger opposition from industry   | <input type="checkbox"/> pan-european experience exchange                              |
| <input type="checkbox"/> deterioration of the environment due to the adoption of West European life styles | <input type="checkbox"/> higher demands of citizens (eg. better information, services) |

**26. Overall, do you expect that EU-accession will be positive or negative in relation to environmental conditions?**

- more positive  
 more negative  
 in balance

**Future Interests.**

**27. The CAPE project will be organising several conferences and workshops in the next 12 months. Which issues would you like to see on the agenda of these events? Please state your priorities!  Tick one box per item, please!**

	key area of interest	not essential now
<b>applications</b>		
monitoring and forecasting of <b>air quality</b> .....	<input type="checkbox"/>	<input type="checkbox"/>
monitoring and control of <b>ground water</b> .....	<input type="checkbox"/>	<input type="checkbox"/>
<b>river</b> information systems .....	<input type="checkbox"/>	<input type="checkbox"/>
remediation/ management of <b>contaminated land sites</b> .....	<input type="checkbox"/>	<input type="checkbox"/>
<b>domestic waste</b> management .....	<input type="checkbox"/>	<input type="checkbox"/>
treatment of <b>hazardous waste</b> .....	<input type="checkbox"/>	<input type="checkbox"/>
local <b>emergency support</b> systems .....	<input type="checkbox"/>	<input type="checkbox"/>
<b>risk assessment</b> techniques and systems .....	<input type="checkbox"/>	<input type="checkbox"/>
“ <b>green production</b> ” in industry .....	<input type="checkbox"/>	<input type="checkbox"/>
environmentally friendly <b>transport management</b> .....	<input type="checkbox"/>	<input type="checkbox"/>
<b>technologies</b>		
advanced <b>data acquisition</b> technologies (e.g. satellite remote sensing) .....	<input type="checkbox"/>	<input type="checkbox"/>
advanced <b>modelling &amp; simulation</b> techniques .....	<input type="checkbox"/>	<input type="checkbox"/>
data <b>exchange</b> (e.g. transborder/ across hierarchies) .....	<input type="checkbox"/>	<input type="checkbox"/>
<b>Geographic Information System</b> integration .....	<input type="checkbox"/>	<input type="checkbox"/>
<b>multimedia</b> data integration .....	<input type="checkbox"/>	<input type="checkbox"/>
public environment <b>info systems</b> .....	<input type="checkbox"/>	<input type="checkbox"/>
<b>decision support</b> systems .....	<input type="checkbox"/>	<input type="checkbox"/>
metadata/ <b>data handling</b> issues .....	<input type="checkbox"/>	<input type="checkbox"/>
<b>general</b>		
environmental <b>impact assessment/</b> scenario analysis .....	<input type="checkbox"/>	<input type="checkbox"/>
<b>modelling</b> energy/ transport <b>demand</b> .....	<input type="checkbox"/>	<input type="checkbox"/>
raising <b>public awareness</b> for the environment .....	<input type="checkbox"/>	<input type="checkbox"/>
sustainable <b>transport planning</b> .....	<input type="checkbox"/>	<input type="checkbox"/>
<b>institutional</b> issues (e.g. transborder cooperation) .....	<input type="checkbox"/>	<input type="checkbox"/>
<b>other</b>		
(  ) .....	<input type="checkbox"/>	

**28. In addition to attending conferences would you be interested in participating in any of the following activities?**


Please tick all appropriate boxes!

- Targeted training sessions.  
 Technical exhibitions.  
 Staff exchange programmes.  
 Technical on site visits.  
 Receiving good practice guidelines/ training manuals.  
 E-mail discussion forum.

**Thank you very much for participating in this survey!**

**29. Would you like to receive any of the following?**  Please tick all appropriate boxes!

- the final report of this survey
- further information on the CAPE project
- invitations to future events as ...
  - speaker/ exhibitor
  - participant

 **If yes, please give the contact details of the person to receive it:**

Name: .....


Organisation: .....


Postal address: .....

.....

Email: .....

**30. Would you suggest other persons to receive invitations for participation in future events?**

 Please provide their contact details below!

**Do you have any additional comments?**  Please, write them below (if necessary, add a new page)!