"Capacity Building and Strengthening Institutional Arrangement"

Capacity Building for EEAA Training Departments (Advanced)

"New Technologies in Training"

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APAT

Agency for Environmental Protection and Technical Service

Service for the Environmental Education and Capacity Building

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1. New technologies in training (I)

The evolution and implementation of new technologies and didactical methodologies in training activities can introduces a more effectiveness in teaching and learning process, in particular to promote an integrated and interactive knowledge.

These new technologies, in fact, allow collaborative learning activities, strengthening communication and sharing experiences, both in presence,through application of specific software, or in a virtual environment through Internet.

1. New technologies in training (II)

These new technological tools can be applied also in environmental capacity building field to promote continuous training processes for professional figures involved in the field of environmental protection, developing specific skills and competencies, promoting sharing of experiences and creating technical and scientific relationships between trainees, trainers and experts.

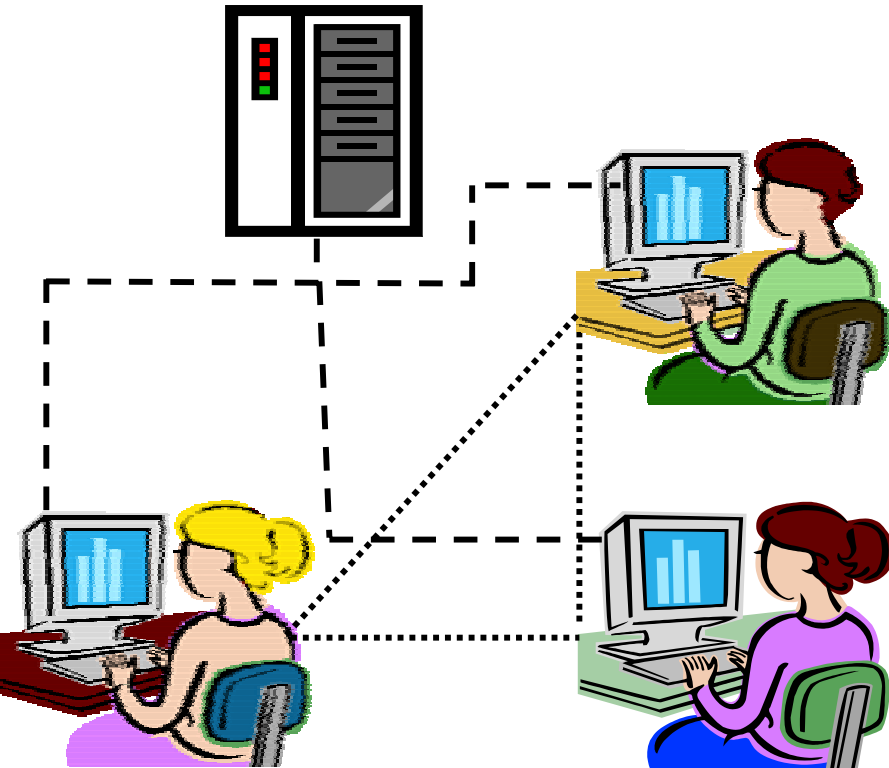For example it is possible to consider the following technological tools:

✓ E-Learning

✓ SPSS Software

✓ AMACI Software

2. E-Learning System (I)

E-learning is a didactical methodology based on the disjunction between learners and teachers in which training materials are provided to trainees through Internet.

The main objective of e-learning application in the field of environmental protection training is the relationships between learners and experts, focusing on the communicative aspects involving all actors that, at the same time, deal with the same environmental issues.

For these reasons e-learning can be considered as an effective didactical alternative to the traditional training both indoor and outdoor.

2. E-Learning System (II)

E-learning is based on a high level of **flexibility**, according to the user's training features, time availability and specific training requirements, in fact, an e-learning system should have three main characteristics:

✓ **"customability",** allowing different vocational specializations

✓ **dynamism**, allowing the up to date of training contents in real time

✓ **networking**, allowing the deepening of training contents through links to web sites of interest, scientific and technical thematic forum, and contacts with experts through e-mail.

2. E-Learning System (III)

Through **asynchronous activities** users can attend courses in self training, without any bond of space and time, download didactical documents and self evaluate their level of knowledge.

The **synchronous activities,** guided and monitored by a tutor or an expert teacher are finalised

✓ stimulate cooperation among trainees and comparison between different skills and competencies (virtual classroom)

✓ create a network between trainees and experts in specific scientific and technical fields

2. E-Learning System (IV)

In e-learning activities, trainee is an active subject for the definition of his own training course, therefore the e-learning system has to make able the user to:

✓ verify his level of knowledge

✓ define his own training objectives

✓ verify the level of knowledge acquired

In this process a key role is played by the tutor on-line which has the task to develop operatively the didactical modules of the course, to guarantee the quality of the training activities, to motivate trainees and to support them in the didactical methodologies.

2. E-Learning System (V)

The development of technical and scientific contents of each e-learning course are organised in different training modules and units and should be developed according to some quality principles:

✓*practical aspect*, didactical contents have to be strictly related to the environmental practical problems

✓*completeness and self standing*, training modules have to be organised on the base of a defined structure which allow an exhaustive explanation of the environmental issues dealt with

✓ *simplicity*, training contents have to be exposed in a easy and linear manner, also using practical examples.

2. E-Learning System (VI)

Other qualitative features of an e-learning system which contribute to customer satisfaction are based on the following aspects:

✓ *Qualitative level of trainees assistance*: technological help desk, teacher assistance, tutor assistance
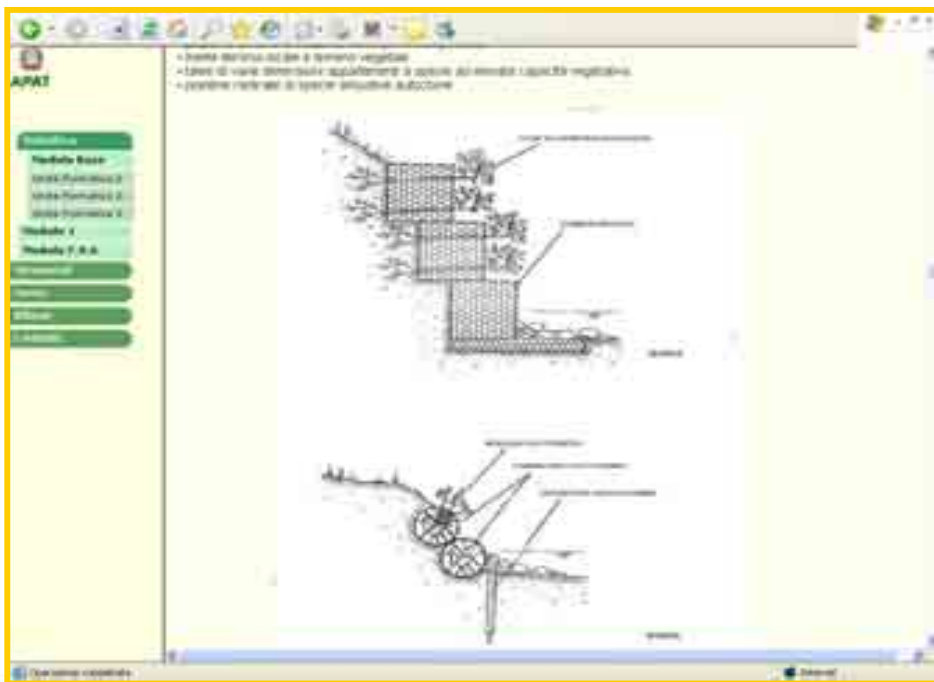
✓ *Ratio of tutor/trainees*, definition of accepted number of trainees assigned to tutor

✓ *Time table,* definition of the length of training activities

✓ *Documentation,* description of the didactical documents available

3. SPSS Application study (I)

Another useful tool to design, develop and actuate environmental training activities is the software SPSS, that allows the management and analysis of statistical data

In particular with SPSS it's possible:

• to collect in a data-base all the information of questionnaires

(for example to collect results of questionnaires administered during TNA phase or Follow Up phase)

• to elaborate general and specific statistical analysis to evaluate results and trends (by means of specific 'statistical tables)

• to develop graphical representation to present results

• to import information collected with other programs (eg. Excel or Access)

3. SPSS Application study (II)

The menu of SPSS includes different options, such as:

File :to create a new SPSS system file or open an existing system
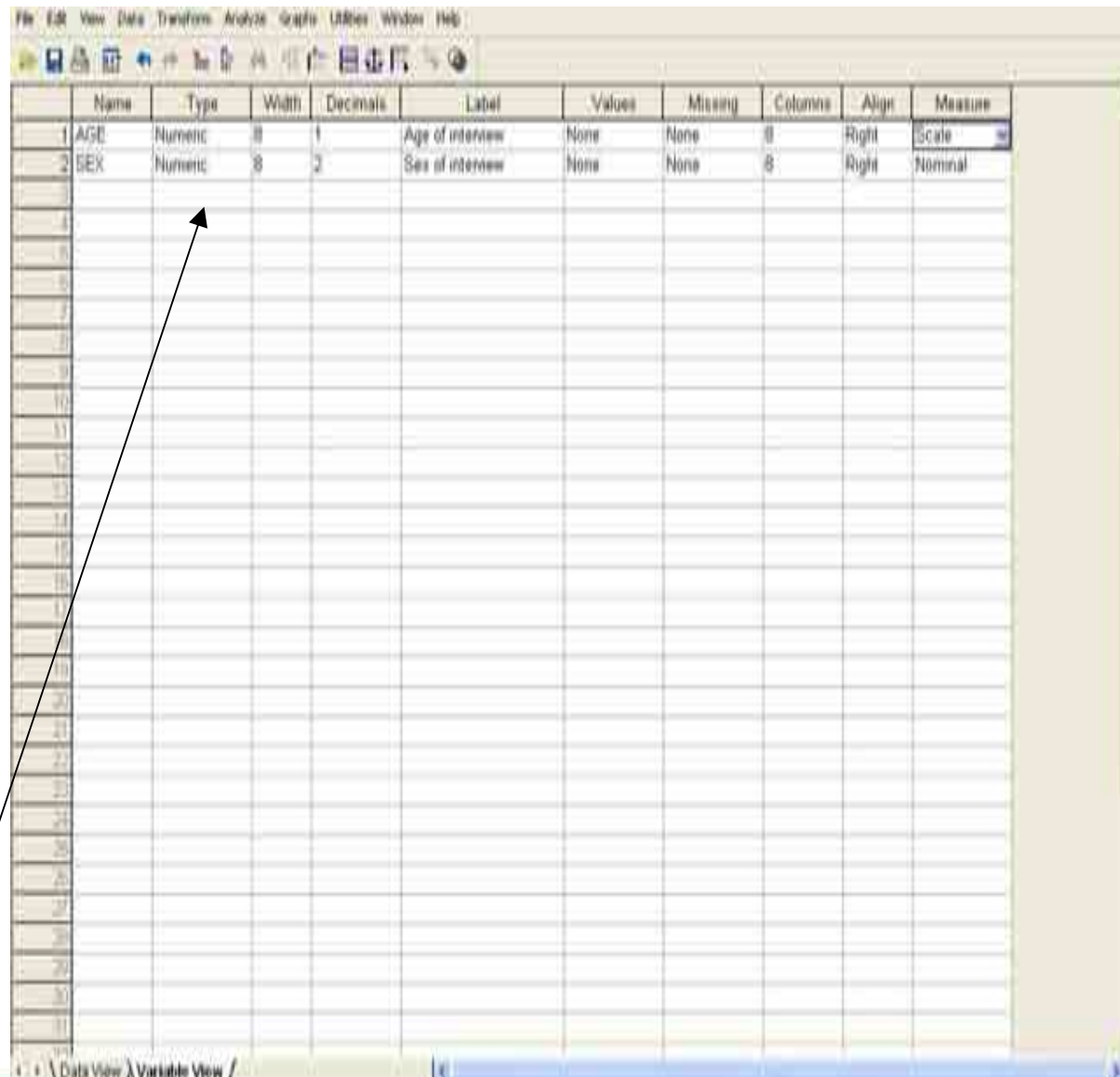
Edit: to cut, copy, and paste data values from the Data Editor

View : to turn toolbars and control the display of value labels and data values

Analyze: to analyze results choosing from different statistical procedures such as cross tabulation, analysis of variance, correlation, linear regression, and factor analysis.

Graphs : to create bar charts, pie charts, histograms, scatterplots, and other kinds of graphics

3. SPSS Application study (III)
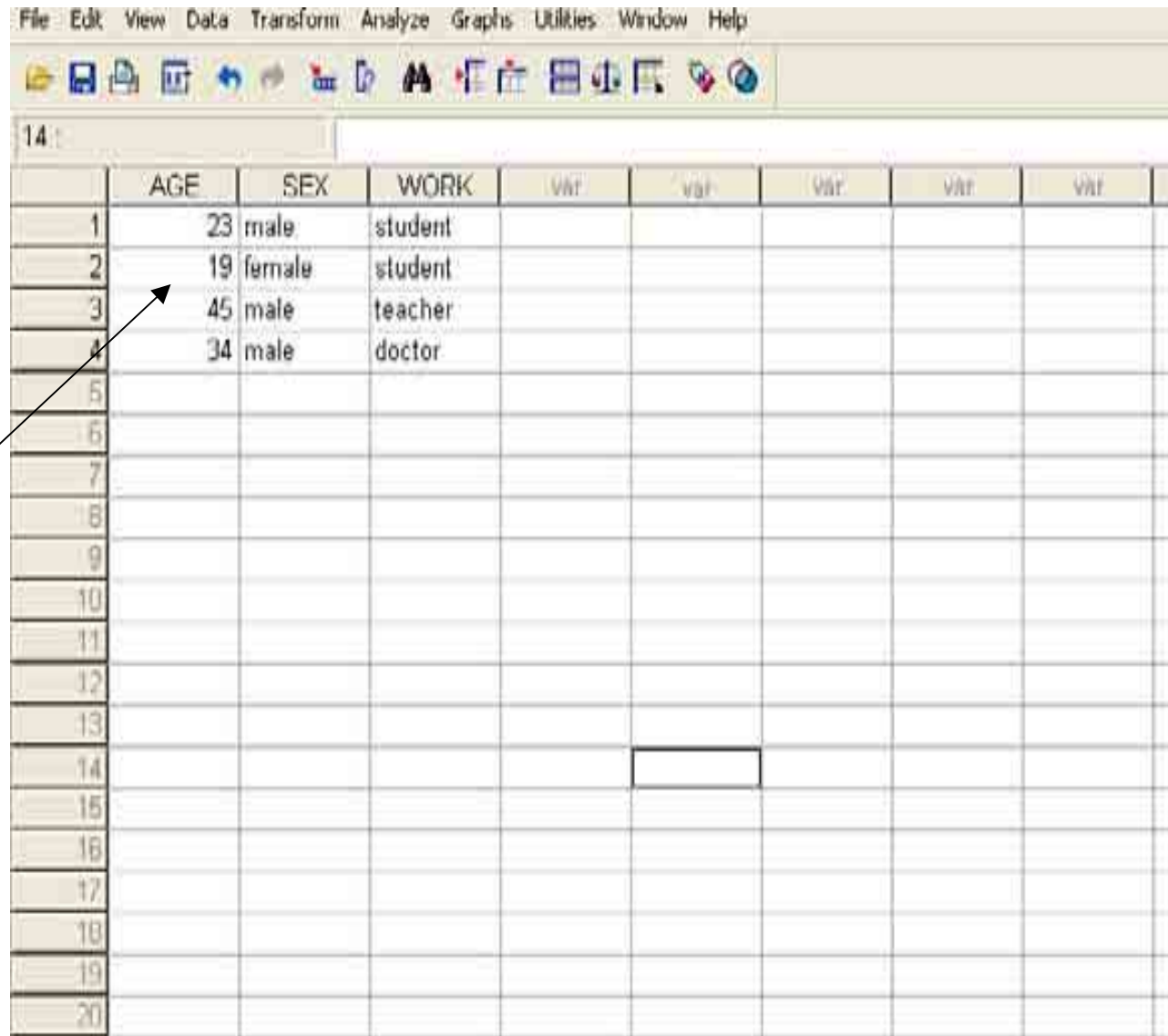
The data-base of SPSS is divided in 2 part:

1) <u>To define every variable</u> and its characteristic (name, type, label, values, measure, etc..)

In the figure is showed an example to classify the variable 'Age' and 'Sex' of people
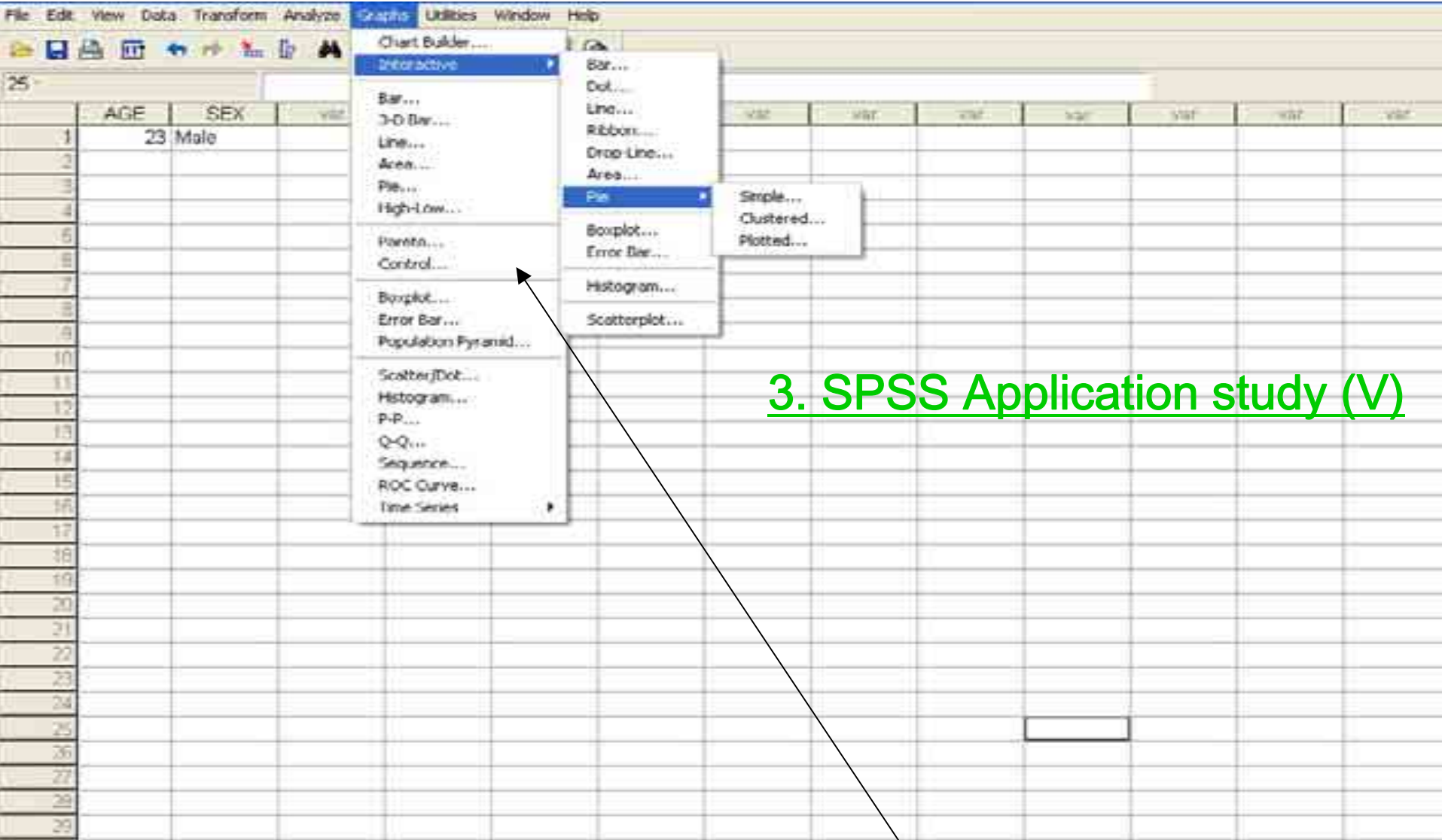
3. SPSS Application study (IV)

2) To classify and codify the results for every variable

In the figure is showed an example to classify people' answers to a questionnaire.

3. SPSS Application study (V)

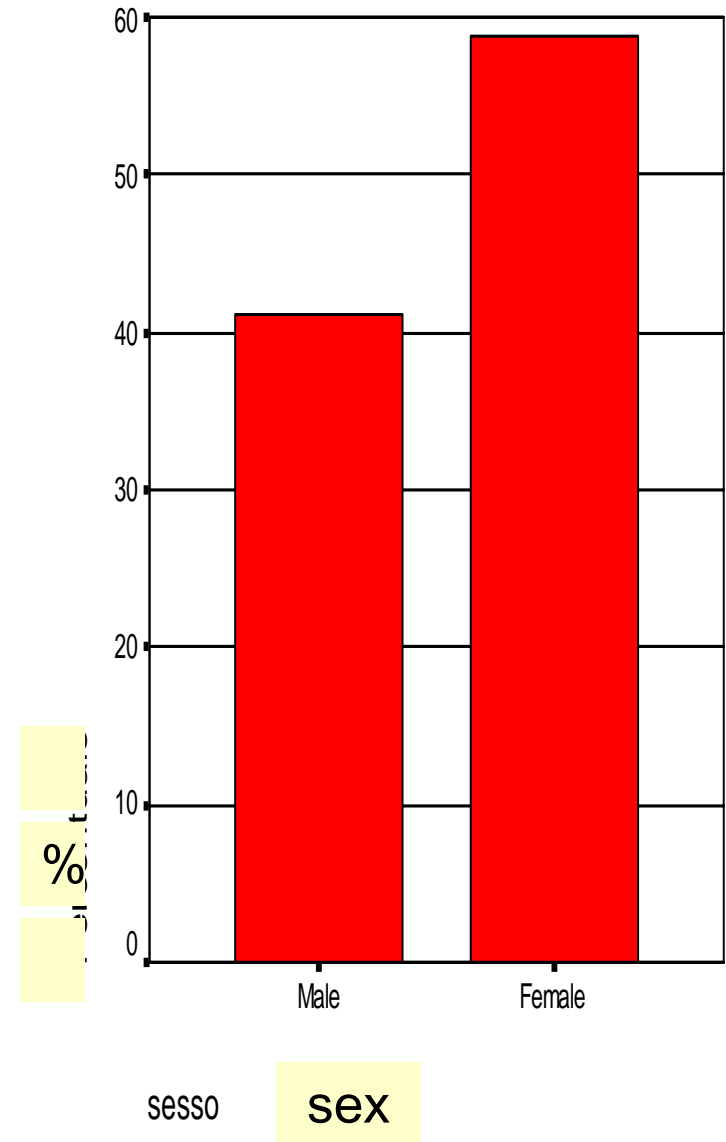With SPSS, after the collection of data, it's possible carry out different kind of graphics representation

3. SPSS Application study (VI)

Statistiche

sesso

N	Validi	sex			1500
	Mancanti				0

Frequency	%	%	%

		Frequenza	Percentuale	Percentuale valida	Percentuale cumulata
Validi	Male	618	41,2	41,2	41,2
	Female	882	58,8	58,8	100,0
	Totale	1500	100,0	100,0	

After the collection of results in the data-base, with a few instructions it's possible to carry out 'Table of frequency' and appropriate graphic to present results

%

sesso   sex

4. AMACI Software (I)

AMACI is a software code that represents a useful experimental tool to support decision processes on environmental issues, especially to manage participation to solve problems at local level.

AMACI can support also environmental training activities in order to promote and to raise environmental awareness by means of management of debates and discussions between trainees, tutors and trainers.

Particularly, AMACI can be used in working groups activities, to support participants to better understand environmental protection topics and the different impacts on environment caused by anthropic activities (waste production, water consumption, environmental impacts etc.)

In fact, AMACI by means of its different tools such as graphics, tables, environmental matrices, provides useful support to describe environmental scenarios showing available elements for possible options related to environmental problems and solutions

4. AMACI Software (II)

Particularly, AMACI is a multi-criteria analysis software tool able to :
- ✓ compare possible alternative environmental strategies
- ✓ analyse how different environmental strategies can effect and lead to different solutions to environmental problems analysed.
- ✓ support environmental training processes giving to trainees the possibility to deeply understand environmental situations by means of specific potentiality, dynamics and limits
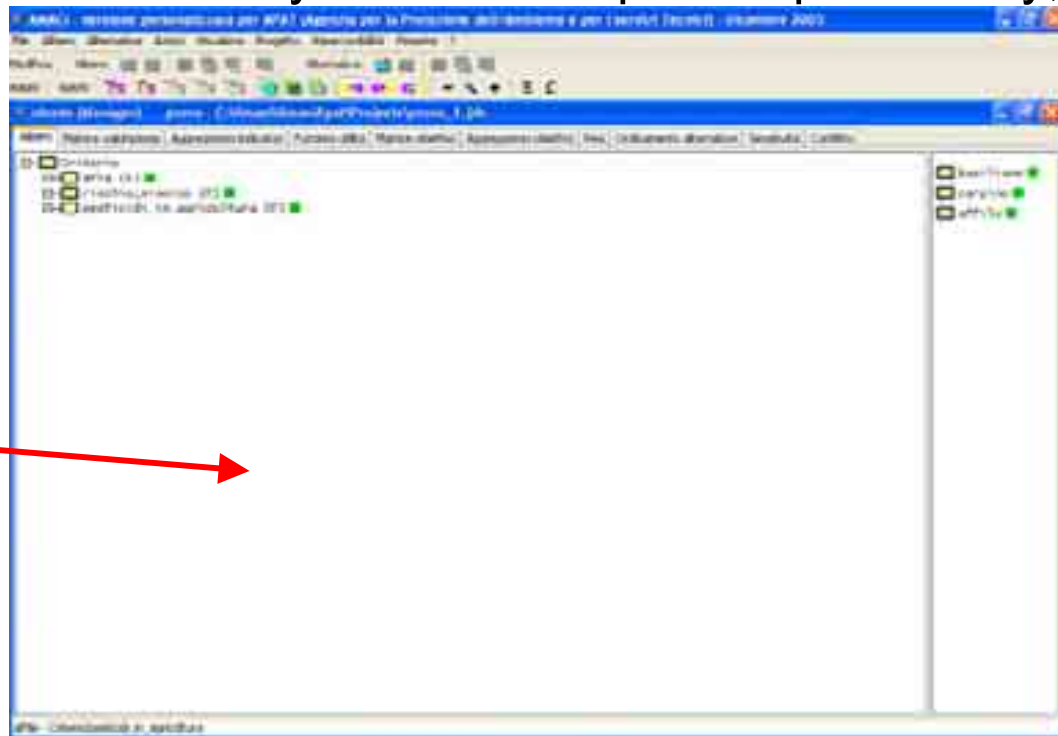
This figure shows the data-base to insert environmental data

4. AMACI Software (III)

Relevance of issues

%

Air

Seismic Risk

Agricultural Pesticide
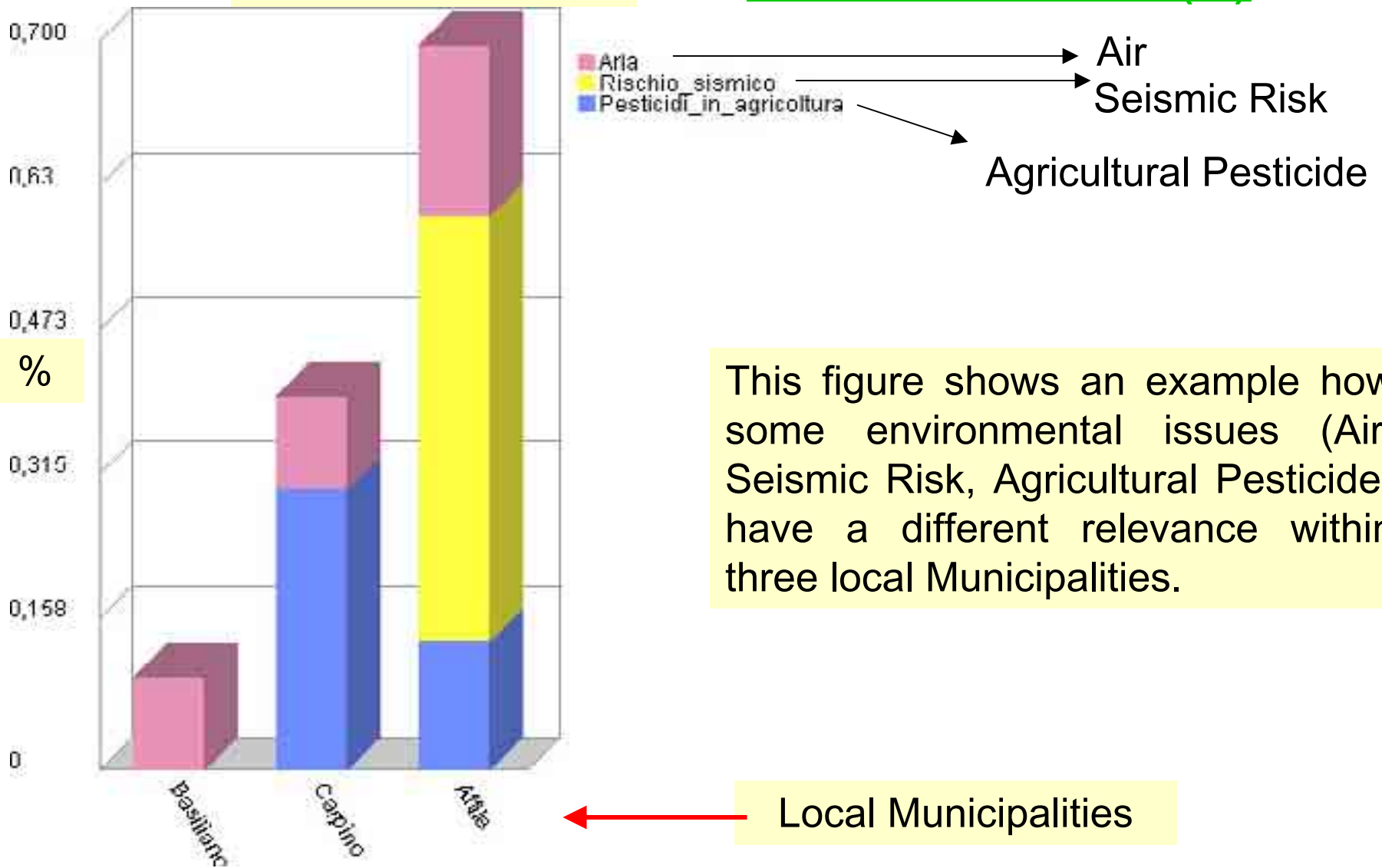
This figure shows an example how some environmental issues (Air, Seismic Risk, Agricultural Pesticide) have a different relevance within three local Municipalities.

Local Municipalities