A NEW MODEL OF ENVIRONMENTAL COMMUNICATION FOR EUROPE FROM CONSUMPTION TO USE OF INFORMATION

Expert Corner Report

Prepared for the
European Environment Agency

By the
Centre d'Estudis d'Informació Ambiental
Institut Català de Tecnologia
C/Ciutat de Granada, 131
08018 Barcelona
http://www.ictnet.es/terrabit

SUMMARY

The present report deals with the question of which changes should be made in the current environmental communication model so that information becomes a real tool to understand environmental problems, to orient decision-making towards their solution, and to behave and act towards sustainability. The transition phase to a new communication model is described as a process that moves information from passivity to activity, changes its content, and thus requires developing a new and different representation of knowledge that facilitates its understanding.

Through the study and analysis of the current characteristics of supply and demand of environmental information in Europe, conclusions are drawn as to the lacks of the traditional communication model in terms of its effectiveness to induce cultural change towards sustainability. While the written media are perceived as the most important suppliers of environmental information, they are also considered to transmit the less credible data. Social perceptions of the mass media, together with their limitations (such as lack of space, diversity and specialisation, or time constrictions) determine the need of reviewing the traditional communication model.

An alternative model of environmental information exchange in Europe is then put forward. The new model is based on interactivity, participation, plurality of sources and opinions, different representations of reality, and elimination of space, time and variability constrictions. This model can be characterised by three basic aspects:

- Use of the new technological supports
- A new and different representation of knowledge
- A review of the contents offered to society

Different experiences at various territorial levels are already testing this model, and some of them are described as case studies in this report. In order to promote further and deeper analysis of its potential and implications, some strategies could be evaluated and initiated. Among them, the conception, design and creation of environmental communication research projects, initiatives or centres to deal with the need of developing new and innovating environmental communication methodologies that confer to information a value of use and not of consumption.

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1. INTRODUCTION AND OBJECTIVES OF THE STUDY

In contrast to previous historical periods, the contemporary world is characterised both by an information overload and by an acceleration of the pace, scale, and intensity of environmental problems. The increase in information in the last decades has not been able to stop environmental degradation, and in many ways it can be argued if it has even spread it. Information *per se* does not prevent the deterioration of the environment. Only when information is transformed into meaningful knowledge and can be effectively channelled through integrated social action networks can information become a resource to improve sustainability and environmental quality.

A decade ago, the World Commission on Environment and Development stressed in the widely publicised report "Our Common Future" the striking dual process that the growth of current human societies is undergoing. On the one hand, technological and social developments have led to previously unforeseeable improvements in aspects such as global food production or life expectancy. But on the other hand, the number of hungry people in the World is greater now than ever before and "there are also environmental trends that threaten to radically alter the planet, that threaten the lives of many species upon it, including the human species"[1]. The follow-up to the Rio Conference of 1992 five years later has shown us that, despite the warnings of the Commission, today the World is not better off but, on the contrary, those unwanted and opposite trends have been strengthened, intensified, and extended. In the European Union, basic trends in the consumption of non-renewable resources and in the standards of environmental quality have remained relatively unchanged and in some respects they have even worsened. Individual preferences and public policies are still too grounded in unsustainable routines as to steer substantial changes both in present lifestyles and production practices.

In this situation, current mass media face the challenge of communicating properly the increasing knowledge and dilemmas related to the environment. The lack of awareness and understanding both of the problems and of the possible options for dealing with them, limit the chances for individuals, organised interests, and governments to take substantial and decisive actions towards effective socioecological adaptation.

There is a growing recognition that effective environmental information is decisive not only in the public identification and definition of the most urgent problems, but also in the building of the social, economic and political action networks, which are needed to reverse present unsustainable and negative environmental trends. In increasing numbers, social and natural science researchers realise the urgency of current global environmental problems and the need to find imaginative ways to combat them within tight time constraints that the present rate of environmental degradation imposes. Some of these

[1] World Commission on Environment and Development. 1987. Our Common Future. Oxford: Oxford University Press, p.2.

people believe that sometimes it can be useful to set aside for a while the necessary but never ending descriptions and analysis about "what the reality is" and proceed to provide concrete opinions about "how reality ought to be". Within the research community, the jump from one to the other unease many and can even stigmatise the heretic forever. Nevertheless, one cautious way to proceed in that direction is by stating opinions in way of "models". Models can be used either to explain a certain segment of reality or to express the virtues or weaknesses of a present situation in relation to a hypothetical one. They can also attempt to fulfil both functions. Thus the criticisms and policy directions provided in this report should not be understood only as a collection of reflections and other opinions coming from environmental journalists and audiences. Its final aim is to provide a heuristic tool or organised set of ideas, towards which present mass environmental information in Europe could be oriented.

But the challenge of designing an ideal model that would help to improve mass environmental information in Europe is gigantic. In recognising it as such, the ambitions of the present document cannot be too high. For the present purposes a "model' is understood as a set of interrelated concepts and ideas which are based on several assumptions and conditions. They are thought to be relevant not only for the description of the current state of affairs within the field of mass environmental information but also for stimulating new reflections about a portion of reality which might be modified positively only if certain conditions are achieved and resources are invested.

Currently, two models of environmental information exchange could be said to be in struggle. The first one –the traditional model– is characterised by its partiality, sensationalism, and by its inability to transform information into decisive, meaningful, and rational action. Communication processes linked to this model have a non-specialised, general character, and are defined by production routines of daily news and by generation and transmission of information (knowledge) in a fragmented and linear way. At the same time, the criteria adopted for selection of the news are directly related to its impact value.

The second model –understood in this study as the alternative model-- seeks integration and context setting of environmental problems, being the final objective the **transformation of consumption information into information for use**, for decision-making, for knowledge creation. This requires going beyond the one-linear relation between active processors of environmental information (mass media and institutional sources of information) and passive receivers, to achieve a multilateral and interactive dialogue between them. The resulting communication process is characterised by its complexity, its ambiguity, and by a less-schematic scenario, where interactivity is the power.

The new information technologies provide the best tools available to open the above mentioned dialogue, by conferring to communication processes a horizontal, hyper-medial, and hyper-textual capacity, while increasing levels of diversity of sources and empowering social stakeholders in the informative dynamics.

Advancing towards a new model of environmental information in Europe will involve going beyond the traditional division between supply/demand among expert communicators. It will imply linking information to options, and contexts to action by involving a greater number of actors –decision makers, public and communicators-, and including a broader number of events without losing track of the needs of the different audiences.

In this respect, the study seeks to demonstrate, as its first objective, that there is no need in increasing the amount of information generated and transmitted to society. On the contrary, efforts should be made towards social innovation, that is to say, towards creation of new systems and platforms that confer to information a value of use and not of consumption. The main objective is to prove the need of presenting environmental information so that it can be used.

Through the study of existing research work and the performance of surveys, this project will explore the following question: how can a new and efficient model be implemented in order to ensure the integration of the *needs* of a broader set of actors who increasingly demand and supply environmental information, with the *flow* of useful and quality contents of the reported environmental events and processes?

As a second objective, specific initiatives will be analysed as case studies, to prove the need of incorporating three basic elements in the alternative model of environmental information exchange:

- Use of the new technological supports
- A new and different representation of knowledge
- A review of the contents offered to society

FIGURE 1

Information for Decision-Making[2]

"There is already a wealth of information that could be used for the management of sustainable development, but people have trouble finding the information they need when they need it.

In many countries, information that exists is not adequately managed due to shortages of technology and trained specialists, lack of awareness of the value and availability of such information and to the demands of other immediate problems...

Sustainable development information needs to be provided to people who need it, when they need it, and in forms they can understand. Countries should ensure that local communities and resource users get the information and skills needed to manage their environment and resources sustainably ...

Countries and international organisations should provide environment, resource and development data needed for the management of sustainable development to people at all levels, and in forms that are understandable".

[2] Michael Keating, *The Earth Summit's Agenda for Change. A plain language version of Agenda 21 and the other Rio Agreements*. Geneva, Switzerland: The Centre for Our Common Future.

2. SUPPLY AND DEMAND OF ENVIRONMENTAL INFORMATION. SURVEY TO EUROPEAN ENVIRONMENTAL JOURNALISTS

The present report was primarily conceived on the hypothesis that the current environmental communication model is proving not valid in the context of sustainability and the Information Society. This model is in struggle with an alternative model based on interactivity, participation and redefinition of contents. In order to validate this starting hypothesis, several new and existing studies, surveys, and data have been developed and/or analysed.

Based on the information and results obtained, the following lines will describe the characteristics and insufficiencies of both supply and demand of environmental information at a European level. Studies undergone on the analysis of media contents and practices as well as a survey performed to European environmental journalists, together with data provided by the European Environment Agency, reveal that supply and demand do not meet in the traditional model, and that there is a need to experiment alternative methodologies that can effectively facilitate communication of complex events to society, thus orienting decision-making towards sustainability.

In order to analyse the variables related to both supply and demand in the area of environmental information, a survey was performed among more than 100 European environmental journalists, and 25 answers were obtained from Spain (11), Denmark (4), Nederland (1), Portugal (1), United Kingdom (1), Ireland (1), Finland (1), Germany (1) and other countries (4). Some of the aspects related to supply and demand of environmental information that were analysed through existing studies and through the questionnaire that was used in the survey (see Annex 1) were:

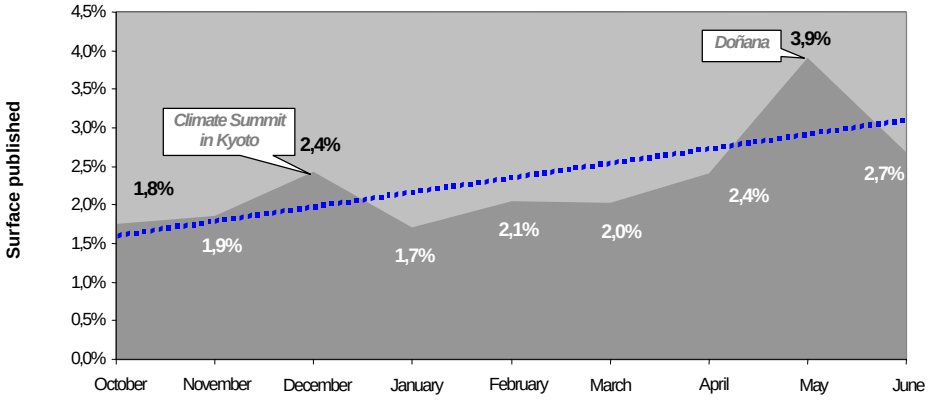
- Characteristics of the audiences
- Most used means of communication of environmental information among different audiences and social groups.
- The role and contrast of interest groups (NGO, private companies, and administration agencies) in the demand of environmental information about specific issues.
- The role and contrast of interest groups (NGO, private companies, and administration) in the supply of environmental information.
- Rating of importance by audiences of different environmental problems in different countries.
- Main environmental issues being reported in each country classified by issues and periods.
- Measurement of credibility of the different sources.
- Number and frequency of the inclusion of experts' opinions in environmental news in each country.
- Research involved in the production of environmental news in each country.
- Rating of importance made by reporters of different environmental problems in different countries.
- Geographical range covered by different suppliers.

- Definition of "good quality" of environmental information given by different groups and experts.
- Human and financial resources of different agencies providing environmental information.

In general terms, a statement can be made that environmental information still represents a very small percentage in relation to the total amount of information offered by the media, if compared to other types of information such as sports, economy or politics. The *Environmental Barometer*[3] performed by the *Centre of Environmental Information Studies (Centro de Estudios de Información Ambiental -- CEIA)* between October 1997 and June 1998, based on the daily study of 10 Spanish newspapers, demonstrated that the **average percentage of surface devoted to environmental issues in the studied newspapers during those nine months was of 2,3%, with a variation of 0,7**, in relation to the total surface of printed information. This figure, with a light increasing trend, was only surpassed in specific moments, such as the celebration of the Climate Summit in Kyoto or the impact provoked by wastewater spills in the National Park of Doñana. (Figure 2).

FIGURE 2

Evolution of Environmental Information in Spain (October'97-June'98)[4]



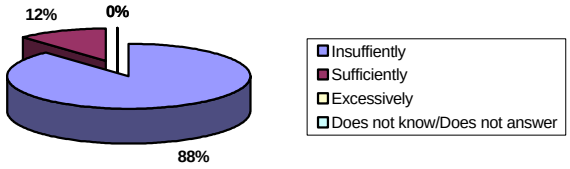
The data offered by the Environmental Barometer of the CEIA are supported by the answers extracted from the survey to environmental journalists. 22 environmental communicators out of 25 believe that environmental information transmitted by the media is insufficient, while 3 hold that it is sufficient, and none considers that it is excessive. (Figure 3).

[3] *Butlletí nº9 (Bulletin nº9)*, September 1998. Barcelona: CEIA.

[4] Percentage of environmental information in relation to total amount of information published. Based in the daily study of: *ABC*, *Avui*, *El Mundo*, *El País*, *El Periódico de Catalunya*, *El Punt*, *La Vanguardia*, *Cinco Días*, *Expansión* and *Gaceta de los Negocios*.

FIGURE 3

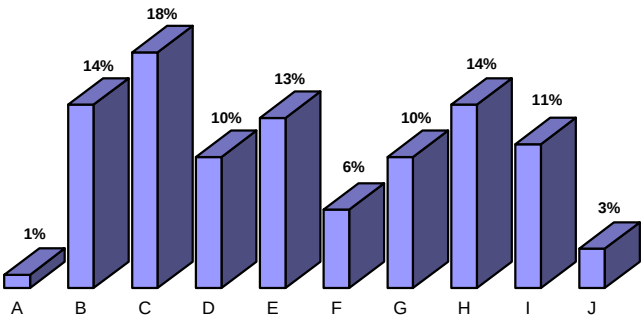
How are environmental issues transmitted in the media?



However, among environmental journalists there is no unanimity with respect to the motives that cause environmental information to be scarce. 18% of the communicators polled by the CEIA believe that this small volume is due to the fact that environmental information is hard to understand by the population. 14% consider, nevertheless, that the principal motive is the type of information: information that tends to be depressive. Another 14% think that the low presence of environmental information is a result of a higher concern from the part of media companies not to lose readers and audiences than to improve quality. For 13% of the polled journalists the problem relies in that, though people consider environmental information of much interest, they find themselves unable to do anything in this regard. 11% of the polled environmental journalists consider that the basis of the problem is that many editors do not know enough about the topics they write about, and this generates general ignorance among the population on what they are able to do in relation to the environment. (Figure 4).

FIGURE 4

Why do the media transmit little environmental information?



A: It is boring
B: It is depressing
C: It is difficult to understand
D: It has little to do with things that really interest people
E: It is interesting to people, but they believe they can do little or nothing about it
F: It affects political interests that press to avoid this type of information
G: It affects private company interests that press to avoid this type of information
H: Newspapers are only concerned of the number of readers and audiences, rather than of information quality.
I: Editors do not know enough about what they write about
J: Other motives

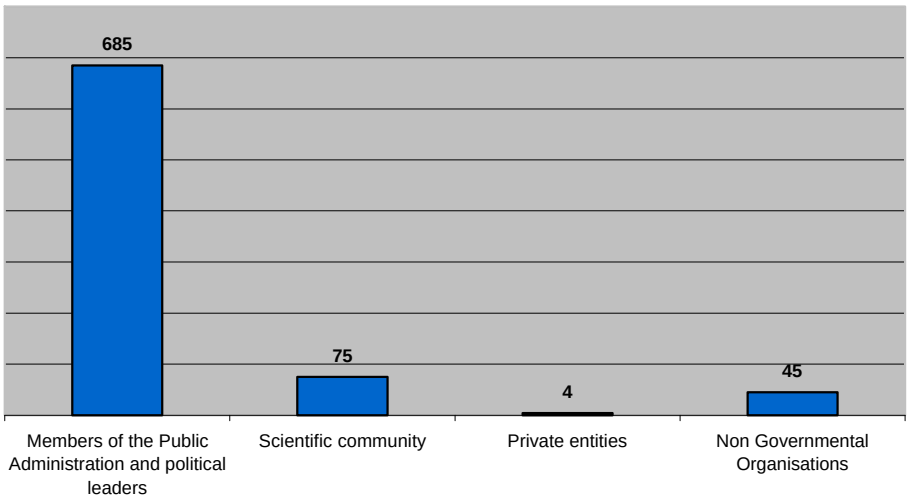
One of the facts that could explain the public's difficulties in understanding environmental information relies on the communicators general practice of using mainly governmental or official sources of information rather than consulting experts or other alternative sources. Sources generally used by specialised journalism are institutional, while the scientific community has little prominence, and neither have industrial sectors or non-governmental organisations.

As a general rule, there is a prevalence of "what is political" in specialised journalism. This trend towards politicization in environmental information is demonstrated in the fact that, for media coverage to be assured during international environment meetings, the presence of Heads of State and Government is fundamental and necessary.

This rule was validated in the conclusions of the research work performed by the CEIA about the informative treatment given to the Earth Summit of 1992 in five Spanish media, at local, regional and national levels[5]. From the analysis of the information published in these newspapers, it was demonstrated that the media prefer using political leaders or members of the Public Administration as informative sources, rather than the scientific community, private entities or NGOs. The results of this study are reflected in Figure 5.

FIGURE 5

Number of mentions made to different types of sources during media coverage of the Earth Summit 1992[6]



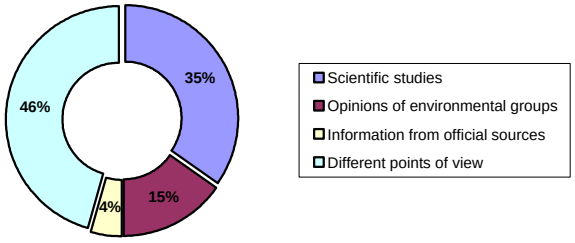
This explains that 46% of the environmental journalists polled by the CEIA consider that environmental information must incorporate different points of

[5] Informative dossier: *1992: La Cumbre de la Tierra. 1997: Foro Río + 5*. Barcelona, March 1997, Centre d'Estudis d'Informació Ambiental.
[6] Newspapers analysed: *Avui*, *El País*, *El Periódico de Catalunya*, *El Punt* and *La Vanguardia*.

view. They also believe that the most interesting opinions and those which help understanding environmental information are usually given by experts in the environmental area, and by members of the scientific community (35%), as well as by groups related to the environment (19%). European communicators place information provided by official sources at the last position in the ranking (4%). (See Figure 6).

FIGURE 6

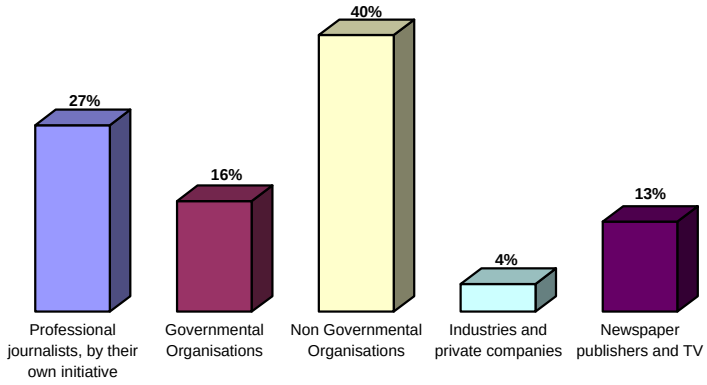
Environmental information should deal mainly with...



Non Governmental Organisations are the first producers of environmental information, according to 40% of the European environmental communicators that answered the survey of the CEIA. Environmental journalists are at the second place in having more influence on environmental information production, as demonstrated by 27% of the answers. 16% consider governmental organisations as the greater producers of environmental information. 13%, nevertheless, think that newspaper publishers and television play this prevalent role. Only 4% believe that industries and private companies are the most influent in production of this type of information. (Figure 7)

FIGURE 7

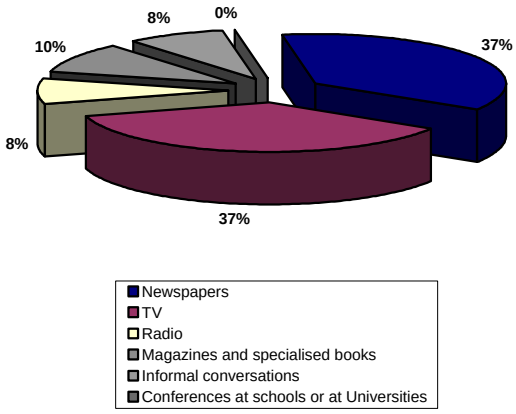
Who exerts more influence in environmental information production?



As far as mostly used means to obtain environmental information, are concerned environmental journalists consulted hold that the principal communication process for this type of information are newspapers and television channels. Only 10% believe that environmental information leaders in European countries are magazines and specialised books. A smaller percentage, 8%, considers that population is informed of topics related to the environment through informal conversations. The same percentage thinks that radio broadcasts are the essential route used by Europeans to obtain this type of specialised information. Not a single one of those polled considers conferences at schools or at Universities as an effective mean used by the public to be informed of topics related to the environment. (Figure 8).

FIGURE 8

Main media used by society to obtain environmental information

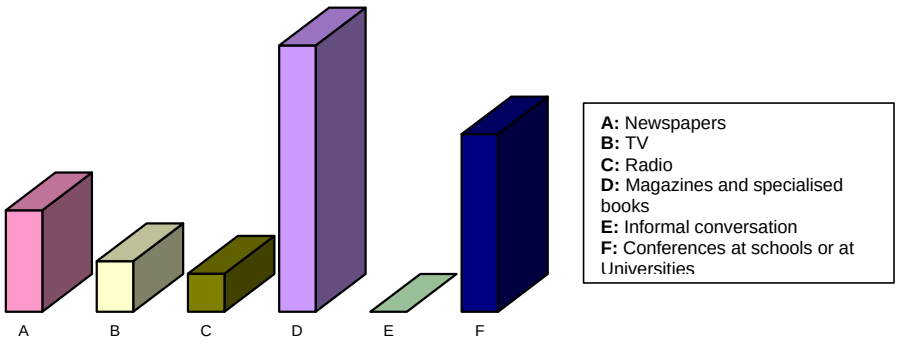


Written media originate most of the volume of environmental information transmitted to society. However, audio-visual media, especially television, have a greater impact on the European population.

However, when it comes to information quality, perceptions change. Though newspapers are considered as the main environmental information transmitters, they are, at the same time, perceived as the worst in terms of quality of this information. Nevertheless, several studies and surveys have demonstrated that they still receive more credibility among citizens than they really deserve, given their insufficiencies and limitations. On the other hand, specialised magazines are considered to offer the better and more credible environmental information. (Figure 9).

FIGURE 9

Media that offer more credible environmental information



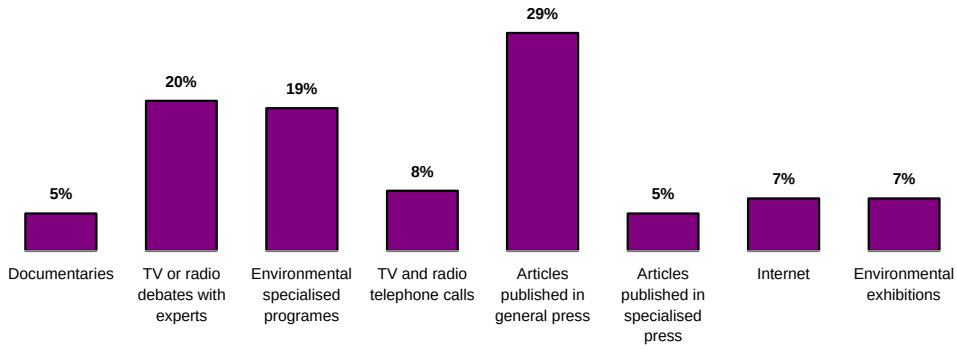
And the fact is that newspapers have serious limitations that hinder optimum treatment of specialised information, and, concretely, of environmental issues. Some of such limitations are the lack of space within the newspaper, the inflexibility due to the existence of fix sections for location of environmental information (generally society), the text reductions undergone by head editors, the scarce variation margin that limits the diversity of environmental issues in each edition to a single piece of news...

Furthermore, there are also limitations that separate the journalist from the news, and are related to time and space. As a consequence of such space-time limitations, the journalist ends up offering a partial and fractional vision of the news. This would not occur if the characteristic tools of precision journalism were used (CD-ROM or access to the telematic networks) that are hardly employed today in journalistic practices. The use of Internet opens the possibility of creating a form of horizontal journalism, by offering a greater number of sources, and granting power to the social agents implicate in the informative dynamics.

However, journalists are hardly aware of the potential of Internet in their jobs. A sign of it is that only 7% of those polled by the CEIA choose Internet as the main communication route to be promoted for supply of environmental information. The majority continues to think that efforts should be directed towards increasing the number of environmental articles in general press (29%), the number of discussions with experts in audio-visual media, television or radio (20%), or the number of specialised programmes (19%). The results of this study are reflected in Figure 10.

FIGURE 10

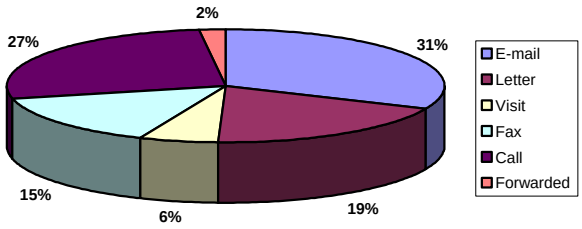
Which type of media should be promoted as the main communication route for environmental information?



In contrast to these data, statistics performed by the *European Environment Agency (EEA)* on the routes chosen for information requests by European actors locate the Internet at the first place[7]. Of the total number of environmental information requests received by the *European Environment Agency* between May and August 1998, 32% were performed through the Internet, 27% through telephonic routes, 19% by means of a letter, and 15% by fax. Only 6% of the requests were made by means of a visit, and 2% were forwarded. (Figure 11).

FIGURE 11

Routes of information request to the EEA between May-August 1998



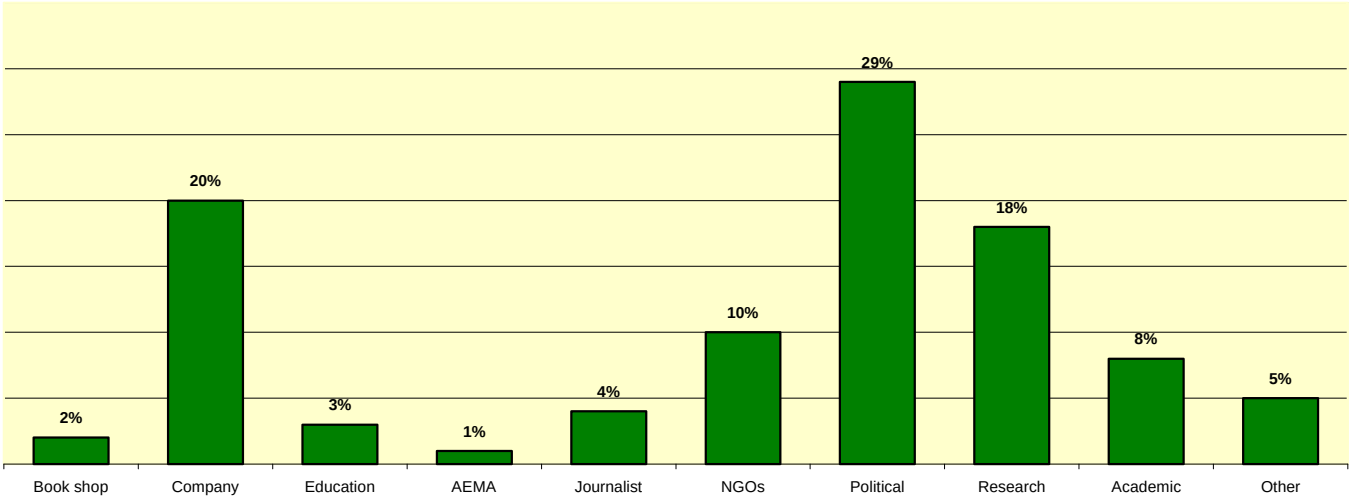
Between May-August 1998 the *European Environment Agency* was requested on environmental topics by groups of different nature. Actors of political nature were at the first place in number of requests performed, followed by companies,

[7] Information of the statistics reports generated by the EEA Information Centre for May, June, July and August of 1998.

researchers and academic groups. Only 4% of the requesters were journalists. (See Figure 12).

FIGURE 12

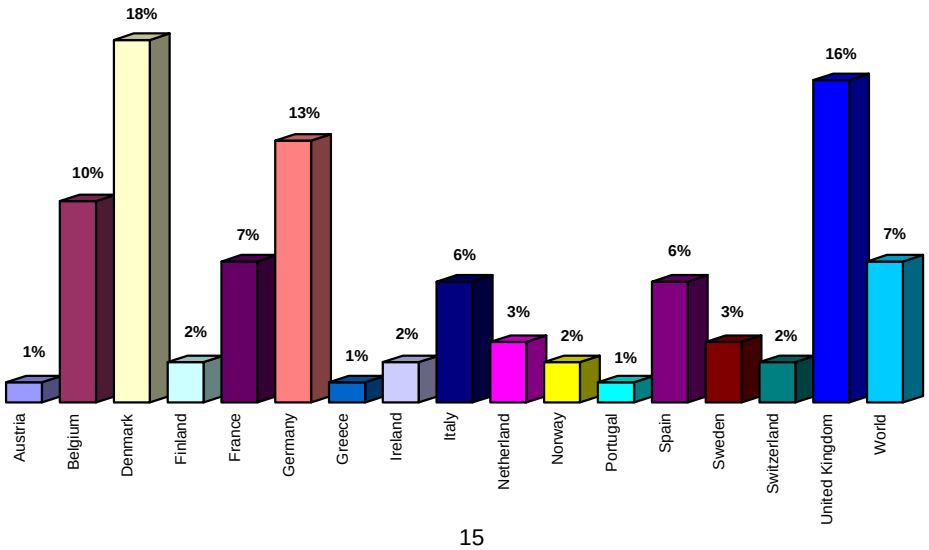
Nature of EEA's clients between May-August 1998



Most information requests to the *European Environment Agency* received between May and August 1998 came from Denmark, country of location of the EEA headquarters, followed by Great Britain, with 16% of the requests, and Germany, with 13%, in the third place. Belgium (10%), France (7%) and Spain (6%) were also among the most active countries in terms of requesting environmental information. The results are reflected in Figure 13.

FIGURE 13

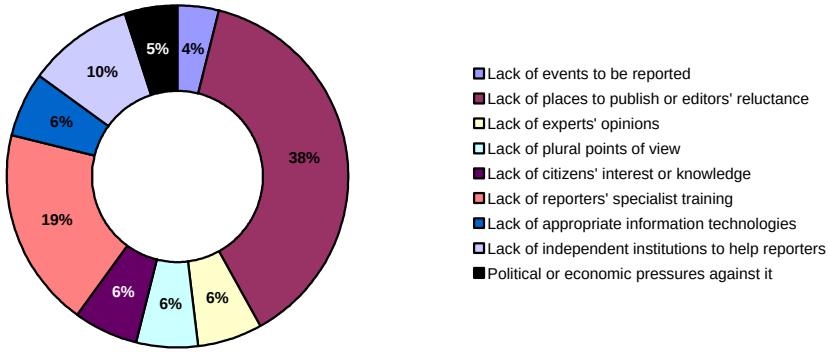
Origin of requests received by the EEA between May-August 1998



When asking environmental communicators about the main difficulties they encounter when treating environmental information, most of them agree to indicate both the lack of space to publish and the lack of specialised training for journalists. Few of them identify as difficulties for environmental journalism the lack of citizen's knowledge or interest or the existence of political or economic pressures in this regard. (Figure 14).

FIGURE 14

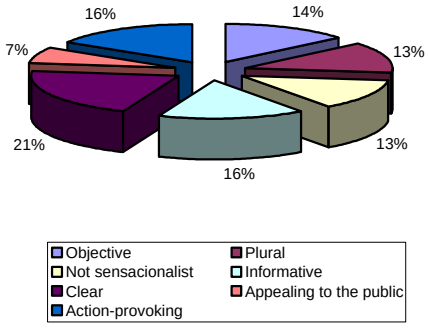
Main difficulties to environmental journalism



Finally, the survey performed among environmental communicators in Europe showed some of the perceptions of journalists on the characteristics of quality environmental information. There is a clear dispersion in perceptions, being all of the quality characteristics identified in the questionnaire at similar levels of preference among those polled. (Figure 15).

FIGURE 15

Quality environmental information has to be...



There is also a general perception among those polled by the CEIA that environmental information is mainly published in the state media (46%) (Figure16) while the same percentage believe that environmental information should be published mainly at local level (Figure17).

FIGURE 16

Most of environmental information appears at...

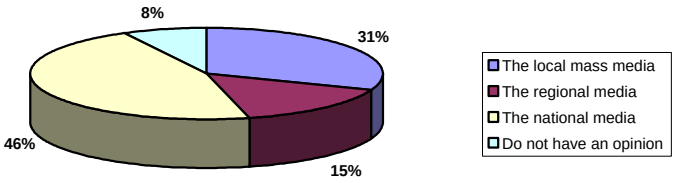
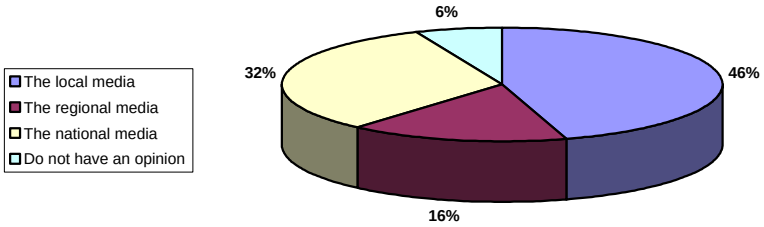


FIGURE 17

Most of environmental information should appear at...



3. DEFICIENCIES OF THE CURRENT MODEL OF INFORMATION EXCHANGE

3.1. Main characteristics of the traditional model

The results obtained and analysis performed in the preceding lines draw some of the basic characteristics and insufficiencies of the traditional model of environmental communication in Europe. These are summarised as follows:

- Environmental information still represents a very small percentage of the total amount of information offered by the media. However, the environmental problem does not rely in the lack of environmental information, as much as in the need of channelling it through appropriate means and methodologies, as it has been demonstrated through the analysis of the treatment of environmental issues by the written media.

- Sources used by specialised journalism are largely institutional. The scientific community plays a secondary role, as well as do private sectors and Non Governmental Organisations.

- Characteristic tools of precision journalism (multimedia tools and electronic networks) are hardly used by journalists that cover environmental information.

- The journalistic routines and the criteria used for elaboration and production of specialised information in newspapers limit the practice of another kind of specialised journalism that approaches the complexity of environmental problems from an integrative and interactive way, and that considers intervention and participation of all the social groups involved in the news.

- The written media originate most of the environmental information transmitted to society. However, the audio-visual media are considered to have more impact on society. At the same time, though newspapers are considered the greater environmental information transmitters, they are also given less credibility in terms of quality of this information. Still, studies and surveys demonstrate that they receive more credibility among citizens than they really deserve, given their insufficiencies and limitations. On the other hand, specialised magazines offer the better and more credible environmental data.

- Some of the important limitations of the current communication model are related to space and time limitations that separate the journalist from the news. These time and space limitations cause information transmitted to be fractional and partial, since journalists must interpret, in many occasions, the facts or data through other actors that were close to the news.

- Information has to be plural, participatory and action-inductive. Sometimes this requires bringing the news at a local level. Currently, environmental information is mainly offered at state level.

3.2. Conditions affecting current environmental media products

Current mass media information on environmental issues is characterised by its partiality, sensationalism, and by the difficulty of being transformed into decisive knowledge and meaningful action. Difficulties in communicating environmental issues properly stem both from the content and format and the type of media used as well as the complex and uncertain nature of this kind of information. In order to reach the public, media environmental messages need to be "competitive". Media compete for time, space, and financial resources as well as for audiences. The ability to gain competitive marginal differences will decide the inclusion of certain news into the mainstream media flow. Rigid formats of the present media also constrain adequate coverage of environmental information. The need for brevity, the lack of regular spaces or times, and the search for impact on the audiences reduce the scope of environmental mass information to a very small number of issues. In order to sustain interest and keep audiences large, environmental information needs to be presented in attractive, identifiable, and entertaining formats. Nevertheless, much of the present mass environmental information is about "bad news". Even in the case where it is about positive events these tend to be presented against other negative processes that happened before or that are currently happening elsewhere[8]. This poses important obstacles to current reporters, much pressured to present information as light entertainment whenever they want to reach large audiences.

In information theory, the quantity of "information" of a given event can be understood as an inverse function of its probability to occur. For instance, to explain that some common daily event will happen again tomorrow provides little information. Thus in any informational landscape, it is precisely the novelty or the strange which makes it become "news". By the same rule, once people already "know" that environmental degradation is occurring, explaining it “again” provides little information. It is only by showing new and different aspects of the process and its links to individual contexts of action that it can become noticeable. When the worsening of environmental quality becomes a usual event, then it loses its informative content.

Thus news must be new. However, most environmental problems are rarely new. As currently understood, environmental issues have been with us for some decades. Moreover, the activities that currently have a greater negative impact on the use of natural resources and the quality of the environment are vast social routines which are rarely sudden accidents or acute events. For the environmental discourse to attract audiences, reporters need to show novel facts or present them as if they were new. Spectacular, dramatic or unusual events tend to receive greater attention. Chronic or visibly negative processes like droughts or soil erosion problems can hardly be given a prominent place in the present media production formats. New voices, events, or anniversaries that can be contested, visualised, or become the source of conflict or public praise are needed to bring back the issue to the mainstream media scene. Slow and regular processes need to be dramatised or presented as controversial if they are to receive some media attention. The ordinary, daily, and unnoticeable character of current environmental

[8] see Lowe, Ph.D.; Morrison, D. 1984

problems means that their causes, consequences, and possible options for action are unlikely to be mass communicated.

News also follows "life cycles". They first appear on the mass scene, develop an interactive process of acceptance, redefinition between emitters and their audiences, and then die. Or at least they die until a different set of actors in a different scene can bring the issue back to life. Environmental information can hardly fit into this rhythm. The media then, encounter great difficulty to provide the necessary spatial and historical context that would allow us to understand the connections between the different communicated processes and events. Nevertheless, consecutive news cycles are not independent from each other. Increasing the number and frequency of news cycles on a particular topic might make more likely that the issues communicated can be located in context more adequately. Long periods of news exposure might eventually stimulate public awareness in certain destructive trends, and might constitute the previous necessary condition for an active attitude towards environmental issues. Indeed many current advertisement strategies follow this principle of repetition. Advocacy groups, knowing the difficulties in carrying out durable long term communication campaigns, tend to focus their claims on specific issues, to simplify their claims, and to select very visual or catching symbols or indicators that can easily appeal to individual emotions or to good will.

Therefore, time constraints affect both the "production" and "consumption" of mass environmental information. On the one hand, providers need time to investigate and validate their reports, and on the other, receivers need time to select and understand this kind of information. The lack of time usually leads journalists and reporters to use the most formal, standard and institutional sources of information, which characteristically also tend to be the most conservative. Therefore little social impact or feedback is expected: **it is assumed that the sole function of environmental information is just 'to inform', not to stimulate participation or positive reactions from the receivers.** Besides, people make sense of selected information by a multiple and relatively slow process of interaction that occurs between their own daily experiences and the social context in which this information appears.

Under present conditions, both the contents and formats of mass communication on environmental and sustainability issues makes it impossible for different audiences and publics to understand this information and even less to express their views on the subjects that should be most urgently communicated. Both the time spans of production and production of information can be reduced considerably with appropriate technological innovations. Technological innovation in the form of multimedia and Internet products can broaden journalists sources of information and access to them, shorten the time needed to prepare and provide context for the news, and stimulate participation of social actors in the news by reacting to it, expressing their opinions and even modifying its content in an interactive way.

Communicating environmental issues is not so much a question of communicating facts as it is about relations: dynamic relations between causes and consequences, between affected and responsible people and between the local

and the global dimensions. However, most current environmental information and messages deal only with the final effects of environmental problems and not so much with their causes. Rarely does an environmental news report about the economic, political, social or even cultural origins of the environmental crisis. All this is not "news". Talking about the causes entails explicit interpretations that cannot so easily be presented as "facts". Because few references to the causes are given, little context is provided to understand or to identify oneself with the information provided. Environmental information is not only about "informing" about the environment. It deals with the knowledge, values and beliefs, social and individual options for change, as well as the uncertainties and complexities which are inextricably connected to taking different decisions and the benefits and costs of the preferred alternatives, including inaction. In order to reach different and large audiences, the media have to recourse to particular languages and cultural identities. But also, the media have to work in an interdependent set of economic and social conditions, which are unique in each context, where the communication act takes place.

3.3. Language and labels of environmental information

Media messages need to be cast so that they fit into existing *communicative identities* and resonate with pre-existing expectations, values and languages of the audiences. The ways information is labelled and presented set a prior interpretative grid that affects the eventual classification of information as "economic", "social" or "environmental" information[9]. At present, much information which has an important environmental content comes "disguised" under different communicative frames which can distract the attention from anything generally understood as "the environment". For instance, production indicators and prices on main prime resources come under "economic information"; the construction of a new highway or the expansion of a harbour appear in the "transport" news; while urban pollution from private vehicles is under the label of "environment". In a similar fashion, environmental issues can be presented as related to a fragile "nature", that has an intrinsic value that needs to be appreciated, or else, as economic "resources" the exploitation of which is necessary for the well-being of society or for private enjoyment. A pristine tropical island can be shown as the most enviable destination for stressed urban dwellers or as the last refuge for an endangered species. All these opposing moral and cognitive frames can often be found together while reading the same newspaper or during a short time span of television or radio retransmission. The receiver needs to go through a process of frame selection -in which some frames are chosen and others eliminated- in order to make sense of the information and to relate it to his or her own expectations, values, or personal interests[10].

Inevitably, both the general public and the media tend to represent environmental issues in different ways than, for instance, scientists. The general public often group both different causes and effects of different environmental issues together and give particular logical relationships to them which do not coincide with the experts' ones, who at the same time also provide conflicting views. Moreover, complex information such as the probabilities of occurrence of disastrous events tends to be little understood. As such, the media usually have to simplify messages depending on the kind of issues communicated and the type of media employed. Reporters and sources concentrate on one representative or attractive indicator and show it in comparison to different contexts to improve the intelligibility of complex issues.

In this manner, language plays a decisive role in the content of environmental communication[11]. The languages used by the sources very often differ from the languages of the audiences and as such media professionals need to adapt the terms of the former to incorporate catchy expressions and words which can be understood more easily by the latter. The labelling of processes and events as environmental issues, and the words used to convey importance of those issues can amplify, disguise or even completely manipulate the content and the context of the information provided. The representation of the issue is mostly dependent

[9] s. W. A. Gamson & A. Modigliani, 1989

[10] See S. Giner & D. Tabara, 1996. *Cosmic Piety and Ecological Rationality.* Barcelona: Working Paper 96/14 Universitat Pompeu Fabra- Institut d'Estudis Socials Avançats.

[11] D. Nelkin, 1989; Stern, 1991

on the specific use of words that can be finally identified by the audiences or readers as their own language.

But language can no longer be only a matter of words or expressions and their connotations or tones. Language has to be supported by other elements such as graphics, images, video and audio. Hyper-medial and hyper-textual languages allow journalists to simplify messages by linking them to broader pieces of information, and audio-visual elements accompanying texts bring the attractive and more intuitive component to a piece of news.
A new and different process of labelling and framing the environment needs to be developed in the form of **new languages and innovative communication methodologies.**

3.4. Sources, audiences and the media: the need for interactivity

The particular selection of the contents, sources and the effects of mass media environmental information on the audiences are the product of an array of social, economic, political and cultural conditions that are unique in each social context. Interests, values and beliefs are confronted in particular situations where economic forces as much as culture determine the final outcome of media interactions. There is no one-directional relationship between the media as "causal agent" and public as "caused entity". In fact, the actual use of both terms "media" and "public" are problematic, as many different types of media, publics and relationships exist in different contexts. **The effects of the media on audiences are never linear but interdependent, as the media affect audiences *and* audiences affect the media. However, this relationship is not symmetrical, publics do not intervene actively in the production of mass communicated messages in an equal way as do the media professionals. Audiences are only consumers of media products, not producers. And by the same effect they can hardly become users.**

Different sources of environmental information have unequal reception from the media, use different strategies to gain access to them, and are demanded in diverse ways and degrees by media professionals. Each one holds different, and sometimes antagonistic, commitments and interests and expresses in different moral and cognitive frames. Scientists tend to be included into news stories because of a widespread belief that they can provide independent judgements and objective knowledge; officials working in public agencies represent the existing legitimate use of power, and so they become authoritative -but contested- sources of information; voluntary environmental organisations also seek media coverage of their activities, even at the cost of their claims being oversimplified, overemphasised, or trivialised; and, sometimes, a voice representing "the public" or a witness view is also included to reinforce or counterbalance a message's argument. The importance of Non-Governmental Organisations as main sources of stories can be relatively low in comparison with other sources such as scientists and officials.

Dependence on scientific and official interpretations of environmental issues as sources is often intensified by the lack of sufficient training of the reporters to unveil and to communicate the uncertainties and assumptions that characterise the scientific or political process, their products, and their relationships. The extent to which a given social actor or group is seen as charismatic by the audience might also increase its likelihood of becoming a source of information, independently of whether it can provide verified or "objective" information. In this case, charismatic sources might serve more to transmit values, myths and beliefs than concrete information. In some environmental organisations, charisma might also be related to a perception of honesty, credibility, and to the audience's view that they are fighting for the common good. Thus, the relative importance each source obtains in relation to the others and the way it is used by the media depends on a variety of factors and particularly, the degree these stories fit into the media formats, news discourses, targeted audiences, or market demands. Sources gain an implicit "right" to be on the air or in the news not so much by the

voice of the citizens but for their ability or power to get into the media channels as a legitimate or representative public interest or as story-tellers.

Research has found that audiences vary in the way they use the different media to obtain environmental information[12]. Among other traits, differences appear in relation to levels of formal education, occupation, gender, and age as well as previous knowledge and experiences. The degree to which one of these constitutes the main discriminative factor depends on the particular social context in which the transmission of information is taking place. Nevertheless, the socio-economic status and the levels of education are usually the factors that most explain many of the contrasts between written or non- written media use. Increasing levels of education tend to augment the use of all kind of media, more use of written supports, and a diminution of the relative weight of certain types of media, such as television, as a main source of environmental information. Also, more educated people tend to have a different perception of what is the most believable medium to obtain environmental information. Television and newspapers tend to be seen as less credible by those sectors with higher levels of education, although these media tend to be the most widely used by all kinds of audiences to find out about environmental issues. Yet there are differences in credibility among different sources of interpersonal communication and also among diverse forms of written communication. Conferences and lectures with experts and specialised books and magazines tend to score higher in reliability than organisational and peer encounters, popular press, and conversations with friends, family, and neighbours. Thus, many of the media most widely used as a source of environmental information tend at the same time to be considered as the least reliable and vice versa.

It is often argued that audiences exert influence upon the preferred types and format of mass communication. Statements assuring that the media emit what the "audience wants" are questionable, at least to the extent that in general, the public have few avenues to express their views -or a lot less than those available to corporate industries or administrative agencies. **Audiences can rarely adopt an excessively active position to the information they receive. The decision to include or not a given story depends more on corporate media decisions and market pressures than on the voice of the audiences.**

At present, many mass media companies incorporate web sites, electronic mail addresses and other interactive means of communication in which audiences can express their preferences on the content and form of the programmes offered. Some of these sites are visited by thousands of people every week that give their view on a large variety of aspects. But **even though the high impact of the digital versions of some media has been already proven and measured, media companies have not really made an effort of innovation or originality, and have only adapted the Internet to the one-linear model of traditional press or television, instead of using the new media to experiment.** As such, experiences of electronic publications existing on telematic networks have several limitations. They do not represent a new model that fully develops a hyper-textual reality of knowledge. Although there are some interesting telematic

[12] R.E. Ostman & J. L. Parker, 1986-7,1987

communication experiences, they are lacking the characteristics and potentialities of social interaction in telematic networks.

3.5. Environmental contents offered to society

Some critical positions state that the current contents of environmental information tend to reinforce existing social, market and corporate relations instead of undermining them; that the role of environmental information should be to denounce the present assumptions and policies of economic growth and to propose alternative systems of production and political decision making. According to this view, political, social or economic threats posed by environmental questions have proven to be "manageable" by large corporations. In fact, threats have been converted into strengths and have reinforced the prevailing status quo. However, it can also be argued that it is precisely the more conservative character of current environmental information that explains the wider acceptance of the environmental message by corporations and middle class audiences. In this sense, the less threatening "global environmental change" discourse of the nineties has received a better acceptance by the media and political and economic corporations than the "limits to growth" debate of the seventies[13]. The shift from the quantitative discourse of two decades ago to a more qualitative one seems to be more apt to explain environmental change and to locate individual and societal decisions in a way which is closer to lay public's terms. Environmental information has ceased being perceived as a threat to social order and growth. In fact, the result has been quite the opposite. Media environmental information has finally adopted a content and form that has frequently allowed the integration of certain demands of public interest groups as well as the expansion of economic markets and opportunities for products labelled as "environmentally friendly". All this has shown the limits to which environmental information can contradict the values and interests of economic forces.

The media constitute major definers in the contemporary construction of social problems. They can have an important effect on the public perception of environmental realities and eventually on these realities themselves. Under given conditions, the media can affect personal behaviours, although these effects are always context-dependent and multidirectional[14]. The impact of the media on society can be more noticeable in the discovery of unknown realities, preferences, and possible courses of action, than in influencing the final selection of specific options. The media can *induce social change* to the extent that they show to large sectors of population a novel set of possibilities for social action that could not be known otherwise. However, change can be brought about only when these new courses of social action are available in some way or another in the immediate context where individuals carry out their daily activities. The media do not provoke

[13] See for instance, TAYLOR, P.J. & BUTTEL, F.H. (1992). "How do we Know we have Global Environmental Problems? Science and the Globalization of Environmental Discourse". *Geoforum*, 23(3):405-416; and BUTTEL, F.H.; HAWKINS, A.; POWER, A. (1990). "From Limits to Growth to Global Change. Constrains and Contradictions in the Evolution of Environmental Science and Ideology". *Global Environmental Change*, 1(1):57-66.

[14] In this respect, R. Roda Fernández, 1989. *Medios de comunicación de masas. Su influencia en la sociedad y en la cultura contemporanea.* Madrid: Centro de Investigaciones Sociológicas & De. Siglo XXI; also D. McQuail, 1994(1987). *Mass communication theory*. London: Sage; The interelated nature of environmental mass media communciation is dealt, among others, in C. Lacey & D. Longman (1993).

social change, but reveal to many people that certain social and personal options might be available. In so far as the boundaries of individual perceptions set the limits for social action, the discovery of new realities through the media might open the way for new actions.

But, by the same token, the media can also eliminate some options or show that some of them might not be worth taking. It is not only a question of amplification or reduction of realities. Some realities never appear in the media scenes. This is the case for instance, of minority political parties of many contemporary western democracies, which confront great difficulties to get access to large media. The political spectrum of options is reduced to a handful of voting alternatives, so the media reduction of political life has indeed real effects on political life. The media, by highlighting some preferences of social action, also excludes others, as it does with some opportunities for social change.

Undoubtedly, the media do influence environmental perceptions and actions. However, most pro-environmental actions precede media diffusion instead of following it. Unless new options are made available in the immediate contexts where individuals develop their activities, media tend to reinforce existing patterns and courses of action rather than being the origin of social change. The current mass environmental information is shaped partly by the demands and weak interaction with the public but above all by the constraints imposed upon the reporters by the corporations and institutional settings in which they work. Therefore, not only cultural values but *also* market forces determine the production, demand, and distribution of environmental information. All this whole process materialises in peculiar forms of co-operation, pressure, and conflict in which different sources, audiences, and media practitioners interact uniquely depending on the convergence or opposition of interests, values and resources. Due to this, it is impossible to provide a universal account on what could help to improve mass media environmental information in all social contexts; any attempt in that direction must depart from this contextual reality.

3.6. The European context

During the last twelve years, the European Community has undertaken several actions specifically devoted to improving environmental information and education. These have included, among others, the Directive on Environmental Impact Assessment of 1985, the 1988 Resolution on Environmental Education, the CORINE programme of 1985-1991, the creation of the European Environmental Agency agreed in 1990, and the Directive on Freedom of Access to Environmental Information of 1990. Most of these actions have been mainly oriented towards specialised groups of producers and users of environmental information, being mass communication of environmental and sustainability issues at a second level.

Mass environmental communication linked to education was already present in the Fourth Environmental Action Programme, which explicitly stated that "widespread diffusion of information on the environment and on environmental problems, policies and programmes can powerfully support both the evolution and public acceptance of necessary environmental measures". Moreover, as Ralph E. Hallo indicates in relation to the Directive on Freedom of Access to Environmental Information "experience to date indicates that the quality of the environmental information made available can be disappointing and therefore of limited utility for public input in decision-making processes"[15]

On February 1 1993 the Council and the Representatives of the Governments of the Member States of the European Community approved the Fifth Environmental Action Programme, mostly known as "Towards Sustainability". This programme differed in relation to the previous ones in that it attempted to set longer-term objectives under a more global approach and was based on the ideas of *integration*, *subsidiarity* and *shared responsibility*. The new strategy entails that decisions should be made as close to the citizens as possible and emphasises the importance of using horizontal support measures, such as better environmental data, public information and education, and professional training. However, the decisive role of mass communication was not made explicit. One could only read somewhat ambiguous statements and goals to be achieved before the year 2000. These were: a general improvement in the level of environmental information, carrying out information campaigns on selected specific issues, providing better information for consumers, and incorporating the environment into primary and secondary education syllabus. No reference to integrate the mass media in environmental educational strategies was made.

Nevertheless, the mass media have a decisive role in any policy oriented towards improving sustainability and environmental quality standards. In the European Union, environmental mass communication is constrained not only by conditions, which determine the production of media messages in general (as mentioned in the previous sections), but also by the existence of sharp national and regional differences. European media differ according to the different political cultures, the main media organisations and the degree of state intervention in the activities of

[15] R. E. Hallo, 1997. *Public Access to Environmental Information*. Experts' Corner no. 1997/1, pg. 18. Copenhagen: European Environment Agency.

the media corporations in the contexts in which they work. The few attempts to set out common European communication strategies face the resistance of national and regional communication corporate interests and the difficulty of communicating messages across a dense diversity of cultural traditions and languages. This plurality does not mean that common problems can not be dealt with in a relatively similar fashion in different contexts. On the contrary, the link between the diversity of contexts and the actions to be carried out needs to be found in the pursuit of a *common European goal for the improvement of sustainability and environmental quality* which is stated in the many official documents of the Union.

4. AN ALTERNATIVE MODEL

4.1. The role of information in sustainability

Probably, the most widely known definition of sustainability corresponds to the World Commission on Environment and Development which emphasises the importance of ensuring the satisfaction of present needs without compromising the ability of future generations to meet their own ones. Another interpretation, which is based on the concept of ecosystems and has the advantage that it does not have to answer the tricky question of *what needs are really needed*, was stated in the Second World Conservation Strategy. It specifies that a society is sustainable when: a) it preserves the essential ecological processes that maintain life and biodiversity; b) it guarantees the sustainable use of renewable resources and minimises the use of non-renewable ones; c) remains within its carrying ecological capacity. In systemic terms, sustainability can also be understood as a hypothetical state in which three subsystems, the social, the economic, and the biological maximise their own unique set of human-ascribed goals and functions. This systemic approach emphasises the interacting character of the different facets of human development and how the failure or omission of one function can negatively affect the whole system. Finally, in addition to these three well-known definitions of sustainability there is one of particular interest for the present work. It directly stresses the unique role of information to achieve sustainability. It comes from ecology and it is based on a simplified model about the growth of all life forms. From single-cell organisms to animal forms, life can be thought to depend on the consumption of external resources and on the information that this organism needs to obtain those resources. Development, then, can be thought to be a function of only two variables, energy and information. Applying this model to social development would mean that a move towards sustainability would entail minimising the use of energy and resources by maximising the use of information and knowledge.

In the following lines we will centre our argument in a combination of the last two of the four aforementioned definitions, which seem to be the most adequate in understanding the role of mass media in the social endeavour in advancing towards more sustainable futures. Improvements in *economic, institutional and ecological* information are indispensable to advance towards sustainability via strategies that allow the reduction in the need for energy and resources by **transforming information into powerful knowledge, that is to say, going from information for consumption to information for use.**

Therefore, adequate, fast, and accessible communication networks are essential for the improvement of the environment and sustainability standards. A decisive way to link information to action is by indicating the means by which markets can improve their performance simultaneously in relation to their economic, social and ecological goals. Too often, corporate profits result from the worsening of labour conditions and environmental standards. Sustainability, however, entails the understanding that the three types of advances are indivisible, interrelated, and necessary. However, most of the social actions with permanent incidence in the quality of the environment primarily depend on the information contained in the monetary price of resources, wastes and pollution. Under present conditions,

natural resources are relatively cheap, many wastes have a market value close to zero, and most pollution is unpriced. So cognitive dissonance appears when media messages and environmental groups denounce pollution or the depletion of certain resources but at the same time more intensive technologies or new transport developments allow the relative reduction of prices in this pollution or resources. The prevalence of short-term market evaluations and priorities on social and environmental goals impedes integrated sustainable economic decisions.

It is a basic neo-classical economics theory assumption that negative environmental externalities and costs can be internalised by markets functioning whenever the interacting parties have enough information about the side effects and costs of their activities. (However, it is no surprise that many of the assumptions of this impeccable model are not fulfilled in practice). Whether we believe in this proposition or not, there are grounded reasons to think that better information should allow economic agents located in different places to produce their outputs with a more environmentally sound use of natural resources, to improve their access to more efficient technologies, and to implement the latest standards of environmental quality. Thus sharing new information technologies that would work within companies, consumer organisations, or trade union could help to spread knowledge about procedures and regulations on eco-labeling, environmental auditing, or eco-accounting. In some cases, new information technologies could also diminish the need for daily commuting and by enabling people to work at home might also enable them to pollute relatively less. Economic environmental information could also show how to design projects in which unemployed or disadvantaged sectors could contribute to reduce economic pressures on the environment and simultaneously create new jobs or new social integration opportunities. In general, economic environmental information could be oriented towards showing practical ways in which individuals and corporations can increase the economic value of their activities -valued in GNP terms, though- while being socially beneficial and environmentally sound.

However, one thing is knowing a possible set options and another completely different is being able to take them. Better market information needs to be complemented with other kinds of information about how people can improve or participate in existing economic corporations, political institutions, and civic networks or create new ones. An integrative approach to environmental information means that corporations are able to work with citizens to achieve common sustainability goals as much as citizens are allowed to enter into corporate decisions for the same reason. Much of the information related to large-scale risk and potential environmental catastrophes is held under close corporate control. The lack of channels for local citizens and stakeholders to participate in decisions on the benefits and costs and on the adequate safety measures for local communities when they enter into potentially dangerous situations, increases the potential of catastrophe. Being able to participate in the existing political and economic corporations means understanding the values, interests or ideologies which people working in these institutions respond to. Appropriate information -which also steers motivation for civic participation- is fundamental in this respect. Public understanding and intervention in corporate risky decisions is essential to avoid the worst of the outcomes of large-scale potential accidents. Public debate

and accountability should be understood as a basis for the improvement of safety and sustainability and not as a threat to corporate power

Institutional and legal environmental information constitutes then, a kind of information as important as the economic one. Most international, national and regional environmental legislation is little publicised or understood. Without this information, citizens then, are indirectly deprived from the rights to participate for the improvement of the environment. Many claims of voluntary organisations to improve sustainability and environmental quality standards need the legal arguments and support to be properly defended against those who want to impose private interests. In the same guise, environmental agreements between the public and private companies also need ample publicity if they are to extend the potential for broader citizen intervention and accountability. Better public knowledge of legal liabilities and the means denounce to environmental damage are also essential to prevent or compensate many current environmental degradation processes.

In sum, mass sustainability and environmental information should not only attempt to provide ecological descriptions about how the natural systems work but also most important, about how the economic, social and political institutions affect these ecosystems. Sustainability defined in strict economic terms falls short in describing what levels of environmental quality and what level of economic growth are socially desirable in distinct locations and who can be benefited most by choosing a particular set of strategies[16]. Showing and sharing information about the actions of a given industry, the performance of a political party, or how the average household contributes to the worsening of the environment can be crucial in realising remedial options and increasing public awareness of the social causes and responsibilities in a given social context. The possibilities for society to advance to more sustainable futures depend on its ability to modify its current energy-intensive, unsustainable, and environmentally harmful social routines and to create new social structures by developing new forms of integrated actions across the economic, political and cultural spheres. While information plays a prime role, it is not sufficient *per se* to advance towards sustainability. Sustainability and environmental information can become a powerful source of change only when it can be broadly incorporated into the social contexts and policy processes and, in this way, influence substantial decisions on the use of natural resources and the quality of the environment. Given that change is dependent upon the understanding of available options, once alternatives have been discovered and considered as feasible, new decisions can be made. New information opens the way to potential change, but only to the extent that new possible courses of actions are known to be available now or in the near future. Being aware of the options for present actions is the first stage for change.

[16] (L.K. Caldwell, 1990. *Between two worlds. Science, The Environmental Movement and Policy Choice.* Cambridge: Cambridge University Press.

4.2. Key elements of mass environmental information

Mass communication on environmental and sustainability issues face both problems of quantity and quality. In relation to quantity, it is often said that the demand and the supply are small, and in respect to quality that time constraints and other structural conditions affect both the production and the reception of this type of information. In order to define a new and different paradigm of environmental communication these problems have to be analysed and alternatives need to be identified and experimented. The following items intend to put forward some of the keys to a change in the traditional model of environmental communication.

Quality of environmental information

All attempts to define "good" *quality* of environmental information tend to select few characteristics which are understood as the most important by the producer, the receiver or the analyst of the information[17]. However, different social groups focus on diverse traits and differing indicators. Contrasts in the perception of quality of media information about environmental problems arise between reporters, industrial groups, administrators, scientists and advocacy groups. Official and public sources tend to find that being precise and reassuring is often a distinctive feature of good quality while "being alarmist" constitutes a trait of bad quality; journalists commonly claim that being impartial or well balanced, "serving the public", aiming for objectivity, or being independent by not taking part in any specific vested interests, are usual standards of good practice. Nevertheless, most of these characteristics are ambiguous, interrelated, and dependent upon the definitions of the terms. Objectivity, for example, can be simply understood as "what scientists say", instead of "what different sources say, including scientists", a trait that could also be called impartiality. In the first case, objectivity would be measured by the number of scientists consulted or the prestige of the institutions where they work. In the second one, the emphasis would be placed on the deconstruction or opposition of scientists arguments by other groups such as NGO's. The notion of objectivity therefore depends on the assumptions about the production of knowledge and the beliefs and meanings attached to it by the institutions and the professionals who work in it. Therefore, apart from academic circles and vested interest groups, the majority of citizens do not generally have enough time or resources to check the scientific "objectivity" or "truth" of most environmental information.

Faced daily with an infinite and overwhelming flow of information, people have little choice but to select and interpret the part of the news which has any relevant meaning to the personal interests and values. Then, they will believe it or not accordingly. At the level of mass communication, the objectivity of environmental information cannot be fully verified. At most, the objective content of it can only be validated by the interaction of different and visible "truth sources" with their

[17] A. Anderson, 1997; K. L. Salomone & M. R. Greenberg, 1990; R. E. Ostman and J. L.Parker, 1986-7

attendant audiences. Each audience and context claims its own legitimate sources of truth and expresses in a particular language of motives.

Indeed, the adequacy of environmental information can be evaluated by the degree to which it integrates the diverse points of view at stake, in each social context by an open procedure. This however entails that previous decisions about what kind of procedure to adopt for integration are necessary. Environmental communicators, to incorporate the demands of their audiences, need to be close enough to the public as to take people's feedback on meanings and information back to the sources. How close and personal the contact is to the audiences will greatly determine the possibility of understanding and quality of environmental information.

Not only need communicators to be close to their audiences but also to their sources and, most important, to the news. Some of the important limitations of the current model of environmental communication relate to space and time distances between journalists and the news; these time and space constrictions finally result in partial and fractional visions. **To assure quality of environmental information, journalists need to be close to the event, close to decision-making**. This is not always the case and, in many occasions, journalists have to interpret the facts or the data through visions of other actors that were there

An alternative model of environmental information exchange needs to eliminate time and space barriers between suppliers and demanders of information, that is, between communicators, sources and audiences.

Quantity of environmental information

The environmental problem does not rely on the lack of environmental information but on the need of channelling it through the appropriate means and methodologies. In relation to *quantity* one should take into account that an increase of environmental news does not necessarily mean an increase of environmental information. More space or air time does not mean better or more information or knowledge (although having more room available for printing, showing, or transmitting news about environmental issues, does improve the chance for audiences to receive the messages). Therefore, concerning sustainability and environmental issues, it seems appropriate to think that people should have *sufficient* information, supplied through appropriate methodologies, until they feel that they can provide an opinion and decide about concrete actions on distant issues such as the level of national co-operation or the willingness to accept personal costs in global change policies.

Thus, a state of *environmental information deficit* could be described in two ways, either in relation to the demands of the actors of a given social context or in relation to the information, which is lacking for the resolution of a given environmental problem. In the first case, a deficit appears when the actual demand of environmental information by social actors is greater that its supply, whatever the reason this information is asked for. In the second, it means that there exists an unmet need of information to deal with a specific problem or set of

problems. In this case, however, one should take into account that information is only one of the many elements that are necessary to manage a problem and that many other social, political, and economic factors intervene in environmental management. In particular, the amount of information to deal with a given environmental problem might be sufficient, but the human resources and social structures necessary to understand and transform this information into practical knowledge and action might not be enough.

Therefore, methodologies need to be developed in order to ensure that the necessary amount of environmental information is effectively channelled, eliminating through the use of hyper-textual and hyper-medial languages, the space, time and variability constraints imposed upon information by traditional communication models.

Interactivity and multiplicity

In traditional media practices the journalist selects "what is important" from the different pieces of news that he or she handles. Journalism sustained in "objective news" is based on vertical transmission -and without discussion on the interpretative keys of the news- on the part of only one of the social agents that can react to it -the journalists-. Audiences remain passive and defenceless in front of this one-linear communication model, being the journalist the single protagonist of the news. This type of journalism is excluding multiplicity as one of the intrinsic characteristics of the communication model.

Designing **a new communication model from telecommunication networks would entail modifying the function of journalists by also empowering the rest of social agents to participate in the generation and transmission of the news**. Through an interactive process, audiences, sources and information professionals can meet and react to an event, processing and interpreting reality from their different perspectives.

From consumption to use of environmental information

There is a very important temporal dimension that affects the distinction between environmental knowledge and environmental information. Time is needed *to transform information into knowledge.* Understanding, the basis of knowledge, needs time. Much of this time is devoted to the actual act of communication, but time is also needed to reason. Thinking about new ideas and experimenting with them in meaningful ways is a time consuming activity. New information needs to be verified, understood and discussed before it can become part of the body of practical knowledge. For environmental information to become environmental knowledge, individuals or groups have to be able to integrate and use the former in meaningful ways whenever and wherever they consider it convenient. In this sense, to enhance the production of social knowledge on environmental issues and sustainable development, participatory environmental information procedures should be put in practice.

The next step is that environmental knowledge can become environmental action. However, for information and knowledge to promote concrete actions, people

need to select them. The selection from the general flow of information and stock of knowledge might be carried out more efficiently when the purposes of that information or knowledge as well as the actors who need it or want it can be specified. Obviously, the purposes of knowledge and the reasons for its production and dissemination cannot be imposed unilaterally upon a plurality of actors and contexts. On the contrary, participatory procedures need to be developed to improve the definition of the needs, aims and sources of information and knowledge about sustainability and environmental issues. Access inequalities and exclusion in the selection of environmental information can also result in knowledge inequalities, and in turn, this might create wider external negative effects that affect large populations.

Converting information of consumption into information of use, and so, of knowledge and action, means developing participatory models of environmental information exchange.

4.3. The alternative model

The alternative model must be oriented towards social innovation, that is to say, towards creation of new systems and platforms that confer to information a value of use and not of consumption. Environmental information has to be supplied so that it can be used. Advancing towards this model means linking information to options, and contexts to action, as well as involving all the social agents (communicators, public, and decision-makers) in the generation and transmission processes of environmental information. These assumptions have led us to define an alternative model of environmental information exchange as the integration of three basic practices:

- Use of the new technological supports
- A new and different representation of knowledge
- A review of the contents offered to society

Use of the new technological supports

The emergence of new data and image transference systems in immediately usable forms through user friendly digital supports of low cost has led to a gigantic increase of the volume of information, communication and transference of knowledge that was formerly offered only by traditional media.

New technological innovations open still poorly evaluated but highly potential possibilities to environmental communication. The jump of traditional media to the Internet in the form of web sites that project a digital but otherwise faithful version of their content without elements of innovation, proves that there is still a need to experiment in other forms of communication that optimise the differential characteristics of the telematic networks in the benefice of environmental communication.

A new communication model must be conceived and developed through the use of electronic platforms and systems, and telecommunication networks. Only through their use can communication adopt the capacities of interactivity, hyper-textuality, multiplicity and participation of all the social actors, and innovation in the way information is presented (with the use of all the multimedia and hyper-medial elements that confer to information the attractiveness required to catch the audiences), that are indispensable to replace the traditional model that has proven inefficient to change social behaviours towards sustainability.

Designing a new communication model through the use of telecommunication networks means rethinking information (its contents), and also information professionals. Journalists see their functions changed when found in an environment which is totally different to the passive, one-linear environment of traditional media. This new professional is not the protagonist of the news anymore. He or she must mediate a dialogue between the real generators and transmitters of the news: the different social actors involved that participate in the news from their own and personal identities and interpretations of reality.

In the new model, communication is found in the form of virtual communities, newsgroups, electronic information platforms, telematic networks or digital systems where all the actors of environmental information meet, interact and participate to generate and transmit information that responds to their needs and induces action-taking.

A new and different representation of knowledge

In traditional communication practices, lack of integration has led to misuse of information to generate action and induce decision-making from the part of society. Those practices failed to represent knowledge so that it could be used for action taking towards sustainability. A new sort of environmental communication could attempt to *integrate strategies*, efforts, and campaigns, which are now carried out in an unintegrated manner.

For instance, many present environmental campaigns publicise that individual actions are crucial to alleviate environmental problems. This strategy, followed also by public agencies, has been aimed at strengthening the feeling of individual political competence in environmental matters. It has been assumed that "environmental empowerment" can be stimulated by public agencies by raising awareness of personal capacities to have an impact on social outcomes. This has been particularly noticeable in some areas such as recycling, green consumerism, and urban transport. However, media campaigns searching for citizens' co-operation in public and private initiatives to abate environmental problems have often not fulfilled original expectations or have even ended with the opposite results. Many campaigns have been launched before the necessary institutional and technological arrangements have been sufficiently set up. Information strategies have not been understood as part of a broader "environmental policy mix" where different interrelated goals, strategies and measures should be integrated. Inconsistencies and contradictions between what public corporations demand from citizens and what they provide to ensure that people's participation is efficiently channelled are much too frequent. On many occasions, this has led to public disappointment and distrust and as a consequence, future opportunities for positive environmental involvement have not been taken advantage of.

Therefore, an alternative communication model should seek to integrate different strategies from different institutions through interactive, open, interpersonal, and democratic procedures between producers and consumers of information. These could help individuals and social groups define and express more closely what sustainability and environmental information means to them in their own personal contexts. And given that abstract issues such as "sustainability" would acquire a deeper meaning in personal experiences, new ideas in relation to remedial and preventive societal actions might also be more likely to arise.

Low levels of general education and low levels of environmental education in particular, make environmental issues appear to be distant, complex, or secondary problems to the interests and wants of the mainly urban populations. Current environmental illiteracy of large sectors of society keeps the readerships and audiences of environmental information small and fragmented. In turn, civic

participation in environmental problems remains being very low, especially when one considers the intensity and the scale of the problems at stake.

Increasing levels of education could stimulate the demand for information and a proper diffusion of mass information could result in improvements in education. Current formal education, however, does not lead automatically to environmental awareness. Many other cultural and personal factors affect individual interests and the search for environmental information. Personal experiences and positions in the market structure influence the attitudes and the cognitive frames in which both the selection and interpretation of information is carried out.

Besides, even though increasing levels of information can provide a greater knowledge of new options for action, there is no guarantee that more diffusion of environmental information will result in more preventative and individual corrective measures. Quite the opposite can occur. More information can augment one's capability to escape individually and result in more opportunities "to flee rather than fight". Efforts must not be oriented towards increasing levels of information, but towards social innovation, that is, towards development of systems and platforms that display options for action and demonstrate the existence of opportunities for substantial change and engagement. It is only through hope and meaning that decisive transformation can be brought about by large sectors of the population. Raising awareness of the current global and local environmental situation, indicating possible options and their attendant benefits and costs, as well as showing the new roles that citizens and scientists can adopt in the quest for sustainability, constitutes a vast but slow process of *environmental social learning* in which integrated communication is crucial.

Therefore environmental messages ought to be transmitted to the majority of population through easy, accessible and widespread means of communication. The development of new information technologies confronts this dilemma. There is no doubt that new information technologies allow an exponential growth in the flow of transmitted messages worldwide and have an important role in the quest for sustainability[18] .

Citizens will also need to have adequate *indicators* to learn about social and environmental change. However, and most important, there is also the need for participation of citizens in the selection and definition of the most appropriate indicators to assess sustainability and the quality of the environment. Indicators proposed by experts might say little to the public and not integrate their views or possibilities for action. People, by participating more actively in the shaping of sustainability indicators might also be more actively engaged in trying to direct them towards democratically selected goals, which are closer to sustainable paths. *Integrators* should aim to involve people in the production, demand and understanding of this kind of information. By making the public active in the process of production of the content and the format of indicators, information could be converted into real communication, made practical knowledge, and be more easily linked to decision and action. Hence participatory sustainability and environmental information should begin first by opening debates about what the problems that mostly affect local populations are, defined in their own terms.

[18] J.E. Young, 1996 (1993).

Then, it would be a task for integrators to try to link these local definitions and priorities to global and long-term environmental problems and trends. By doing so, they could bring the environmental debate on global issues, future generations, and rights of non-human beings into deliberation at the local and present contexts of action. Fairness in the selection and effects of environmental information could be improved then if: (a) the different stages in the process of production, sorting out, and transmission of information were easily accessible for examination and redefinition by the community; (b) people were able to participate in the decisions relating to what the key issues to be disseminated in each social context should be; and (c) they could intervene in the procedures which are used to validate the information provided about the processes of environmental change and the benefits and costs of the possible courses of action.

In conclusion, a new type of environmental communication platforms could be specifically devoted to gathering, making intelligible, and spreading timely mass media environmental products in a manner that can transform information and knowledge *about* the environment and sustainable development into information and knowledge *for* the environment and sustainable development. The move from the cognitive capacity to improve sustainability to the actual willingness to do so entails not only informative but educational strategies.

New communication systems should aim to fuse expert and lay knowledge in different contexts and to understand the assumptions, languages, and the logical frames of a plurality of social groups and institutions. They ought to integrate the plurality ideas and expressive strategies of different publics and sources by a cross-incorporation of formal and non-formal, telematic and open networks. It is only by a context-oriented social selection and interpretation of environmental information that knowledge and understanding about these kinds of issues could be shared amply among large sectors of society instead of being relegated to only a technical elite of environmental specialists and corporations. This would bring sea changes in the way in which current mass environmental communication is taking place.

A review of the contents offered to society

Integration between environmental information and action will require that current media products be brought adequately into particular social contexts. By creating different procedures and conditions based on new assumptions that determine media information production and consumption, it might also be possible to produce new contents, relations, and effects on social structures and institutions.

The traditional division of labour and institutions within the information and educational fields face serious limitations in confronting the current environmental challenge. Although during the last two decades there has been a notable further professionalisation of journalists dealing with environmental issues, they rarely have gone beyond traditional reporting practices and assumptions. Improving the quality of environmental information entails changes not only of practices but also above all of assumptions. If the process of integration of environmental information into the social contexts of action is to be pursued, this should bring about radical changes not only in the current communication theories, but also

mostly in the existing mass communication practices and institutions. Despite a long and still continuing debate on whether the media can function as mass educators or not, there is little doubt that on the one hand, present media cannot act as environmental educators, and on the other, current educators encounter enormous difficulties in informing adequately large sectors of the adult populations about sustainability and environmental issues. New occupations based on new assumptions and aims are needed. Those reporters who do not believe that the environment is worsening and that the sustainability of our societies is increasingly facing serious threats- will very likely still be working with old standards. This old kind of reporters, of course, will not disappear and might even be very successful in certain careers. But their task will make little contribution to the integration of environmental information with action and to socioecological adaptation. If the public is to understand and be sensitive to environmental change, it is the task of the appropriate communicators to do so in the first place.

In short, one of the most important ways the integration of environmental information could take place could be through the development of new professions and institutions that would perform -in different ways but at the same time- the task of journalists, public educators and others in 'environmental social work'. They should make possible the translation of complex information into intelligible, discussible, and attractive issues and provide the time and the human and technical resources, which guarantee a rich evaluative and participatory feedback from the audiences to each of the original information sources. By proceeding in this way, mass environmental information might increase its chances of becoming practical knowledge for the environment and sustainability.

If this translation is achieved, environmental information should not appear more complex or uncertain than other kinds of information. Complexity and uncertainty are partly depending on individual and social meanings, and in particular, on the extent in which this information can make sense to personal experiences. Among the main functions of the new environmental workers would be the development of methodologies to spread environmental information by combining interpersonal and informal means of communication with new developments in information technologies. These methodologies and techniques should aim at the integration of the plurality of environmental information, understandings, and knowledge in a way, which would be easily accessible and comprehensible to large sectors of society, and especially to adult population.

4.4. Some initiatives testing the new communication model

Several initiatives have emerged that are testing the potentialities of the new environmental communication model as it has been described in this report. It is hard for the purposes of this study to choose among the experiences developed at different levels (and from which we have enough knowledge), for which we will describe and analyse three that seem to fit particularly the expectations and ideas expressed so far.

First, we will describe the **Global City Platform**, an information model developed at local level. Second, we will present the basic features of **APC** (Association for the Progress of Communications), and mainly its characteristics at national and regional levels (**Ipanex, Pangea**). Finally, we will have a look at a world initiative of environmental communication, the **Earth Negotiations Bulletin** of IISD (International Institute of Sustainable Development)

4.4.1. Global City Platform

The **Global City Platform (GCP)** is an interactive information system that gathers together data of the reality and the functioning of a municipality in the environmental, urban, social, economic and agricultural/natural areas, displays them in a territorial basis, and allows its analysis. GCP is developed by means of a two-year project that the *Centre of Environmental Information Studies* carries out with the support of the LIFE Programme of the European union. The pilot trial and first implementation of this platform is carried out in the municipality of Manlleu (Osona, Barcelona).

The GCP is based on the latest information technologies (Geographic Information Systems and Internet) as the support to display information in a suggestive and innovative way; to facilitate its access, query and analysis; and to stimulate the participation of different social actors in its elaboration, interpretation and transmission.

This system seeks to fit organisation and presentation of environmental information in a new communication model, which is derived in part from the emergence and use of the electronic networks and the Internet. In this respect two versions of the GCP have been developed: an “integral version”, which allows access to all the information available in the system and is conceived to give solutions to the needs of municipal managers; and an “Internet version”, which is more oriented to general public and citizens.

Tool’s structure and functionality

- INTEGRATION AND ORGANISATION OF INFORMATION

The platform feeds from different sources of information: the Town Council, public Administration at regional and state levels, private entities, research

centres, social groups, etc. Once the different types of municipal data are selected as relevant and formats have been homogenised, information is classified in different areas of knowledge and activity:

- Natural Milieu
- Urban Milieu
- Social Reality
- Economic Reality
- Environmental Variables
- The Region (contextual information)

❑ FUNCTIONALITY

The Platform allows simultaneous visualisation and query of several information levels. In the case of geographic information, this means that we can superimpose different layers of information related to economic, social, environmental, urban and agricultural aspects of the city, allowing its combined analysis. This displays a global overview of the municipality, and can even disclose unshown causality or influence relations.

It is important to emphasise that, in some cases, original information coming from the source is in non-graphic formatting (databases, photographs, etc.) although it is bound to the territory. The Platform uses this bond to the territory – non exploited by the original source- to display information as a map, making it more understandable and digestible by the user.

Queries to the GCP can be graphic or alpha-numeric. Some analysis, specially relevant according to sustainable development criteria, have been previously defined and incorporated to the system as pre-elaborated and directly accessible information. Equally, the GCP also includes information about legal limits, recommended threshold levels, etc. that may be used for the diagnosis of the state of the municipality with regard to certain environmental variables.

Apart from the functions of visualisation, query and analysis of information, the GCP incorporates several “assistance” functions such as information updating or search tools.

❑ APPLICATIONS

- *Tool for planning and urban management*
  Political agents, decision-making actors, and municipal technical personnel have a system that displays the performance of the city through statistics and cartography on the economy, the social situation, and the urban and natural environment. It is a very useful tool for their daily management work, and for the long-term planing.
- *Public information system. A new source of information*
  Civil society, the media, or experts on the urban system have access to updated and detailed information for their work and study; this allows them to

evaluate and draw conclusions about the performance of the municipality, and about possible improvements to be implemented. The system covers different access levels depending on the type of user (associations, schools, citizens, professionals, etc.) through friendly interfaces.

- *A new communication bridge between citizens and local Administration*

The platform enables interchange of information and opinions between the citizens, the media and the local Administration. It can be used to disseminate proposals and outcomes of local policies and strategies for the improvement of life quality among citizens and the interested collectives. On the other hand, the platform will allow collecting and canalising the opinions and proposals of the citizens and drive them to policy makers.

- *Tool for sustainability*

The municipality as an urban system: Approaching urban issues in a partial way, without taking into account the system as a whole and the side-effects of a decision on related variables, induces partial and incomplete solutions that can worsen the problem or even generate new ones. The Platform allows an eco-systemical approach to the municipality, pooling in one single analysis tool all of all the interrelated variables that can contribute to a certain urban problem.
Identification of trends towards sustainability: Incorporation in the platform of pre-defined analysis of sustainability, adapted to the reality of the municipality and to the available data, will allow monitoring the evolution of the urban system towards or against sustainability objectives.

- *The right to information*

The platform, accessible through the Internet, seeks to promote citizen participation in decision-making processes. Wider social knowledge about the reality of the municipality will facilitate behavioural and cultural changes towards sustainability.

Communicative aspects. The new model

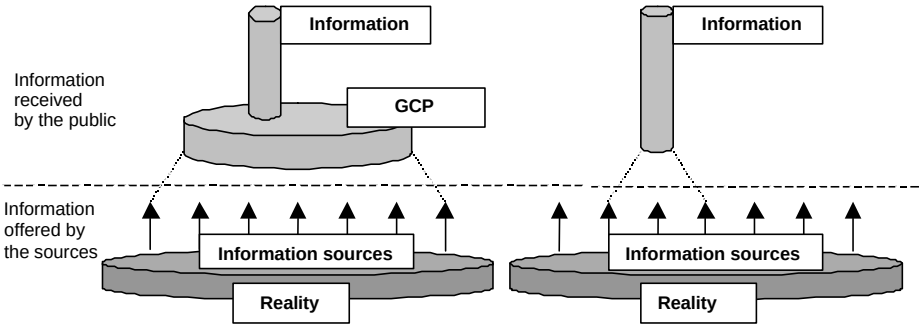
REPRESENTATION OF INFORMATION

Traditional information sources elaborate and spread big amounts of data, reports, studies, etc. that represent “bits” of reality and, although they may be exhaustive, they are often partial. Some characteristics of the information and its sources may hinder the “information process” of a journalist or a citizen: the extensive amount of information available, difficulty or slowness for accessing some sources, the use of languages or expressions hard to understand, etc.

The GCP intends to give solutions to this problem through an effort in the way information is treated and represented by revising, selecting and homogenising data in order to assure its quality and facilitate its access and interpretation. As a consequence of the homogenisation of formats, the platform can display simultaneously different types of information in a single support, providing a context for data and concrete queries (see Figure 18).

FIGURE 18

Setting information in context. The GCP versus the traditional model



Global City Platform.
Users perceive information as a part of the whole.

Traditional Model
Users perceive information in a isolated way.

❑ USE OF NEW TECHNOLOGICAL SUPPORTS

The GCP is based on new technologies: electronic networks, Geographic Information Systems, multimedia resources, etc. It uses new technologies not only as support for information, but also as new communication tools endowing the Platform with qualities such as:

- **High impact** of the information, mainly due to the use of audio-visual formats.
- **Better comprehensibility** of the information. Original information from the sources, often hard to read and understand, is represented –thanks to the Geographic Information Systems and computer tools- as maps, graphics, etc., which are more attractive and understandable.

- **Integration of information of different nature** (in formats –text, images, sounds- as well as in contents) in a single database, allowing simultaneous displaying, offering global visions and setting information in context.

- **Interactivity** of the Platform. A mainstay of the communicative function of the Platform. It offers interactive tools to participate and to express opinions therefore enriching the information and facilitating decision-making and behavioural change towards sustainability. These tools (electronic mail, mailing lists, forums, chats, etc) also allow social actors to provide different interpretations of reality thus enriching the communicative process.

❑ INFORMATION FOR USE

As it has previously been said, the PCG is designed to facilitate comprehension of the information offered and, therefore, its assimilation by the users.
This comprehension of the reality is the first step for awareness raising and behavioural change from the part of citizens towards sustainability.

The PGC also offers, together with data of the state of the municipality and its environment, information about legal limits, recommended threshold levels, etc. that facilitate and stimulate comparison, analysis and design of concrete actions (Figure 19).

FIGURE 19

The PGC as a complex source of information

4.4.2. Association for the Progress of Communications: Ipanex, Pangea

The **Association for the Progress of Communications (APC)** is a global network, constituted by more than 20 international network members. Its mission is to provide support to organisations, social and individual initiatives in the use of the information and communication technologies to achieve sustainable societies.

Between 1982 and 1987, several national independent and non-for-profit computerised networks, appeared as viable information and communication resources. In 1987, GreenNet (UK) began to collaborate with the Institute for Global Communications (IGC) that operates with PeaceNet, EcoNet, ConflictNet and LaborNet (United States). These two networks started sharing their material on electronic conferences, thus demonstrating that transnational electronic communications can serve to communities, both national and international, in their work towards issues related to the environment, peace and the human rights.

The process of information exchange succeeded between the IGC and GreenNet led five networks from different points of the planet to exchange information in 1989. One year later, at the beginning of 1990, these seven networks created the Association for the Progress of Communications (APC), with the objective of co-ordinating the operation and development of this global network. From 1997, APC is constituted by 25 network members and exchanges electronic mail and conference services with 40 associated networks at world level.

This network of computerised global communications for the environment, the human rights, development and peace, offers communication links to more than 50.000 non-governmental organisations, activists, educating actors, policy-actors and community leaders of 133 countries. APC has as principal purpose to develop and to maintain an information system that allows groups that work in favour of social and environmental changes, and that are geographically scattered, to co-ordinate activities on-line at a lower cost in comparison to traditional communication methods such as fax, telephone or commercial computerised networks. NGO's and activists at world level use the APC for their internal communication as well as for their efforts of public organisation.

APC uses several network tools such as the World Wide Web, electronic mail (e-mail), electronic conferences (both private and public), data bases, fax and telex, navigation tools (Internet, Gopher, Telnet, FTP, WAIS), news and information services, directories or international users. To take advantage of its capacity as a global net of networks, APC has established four principal functional programs:

- **Support to electronic networks**. This program is directed to strengthen the capacity of existing and emerging electronic networks, as well as to build strategic communities.
- **Promotion of strategic uses of computerised communication and information technologies**. This program intends to empower communities

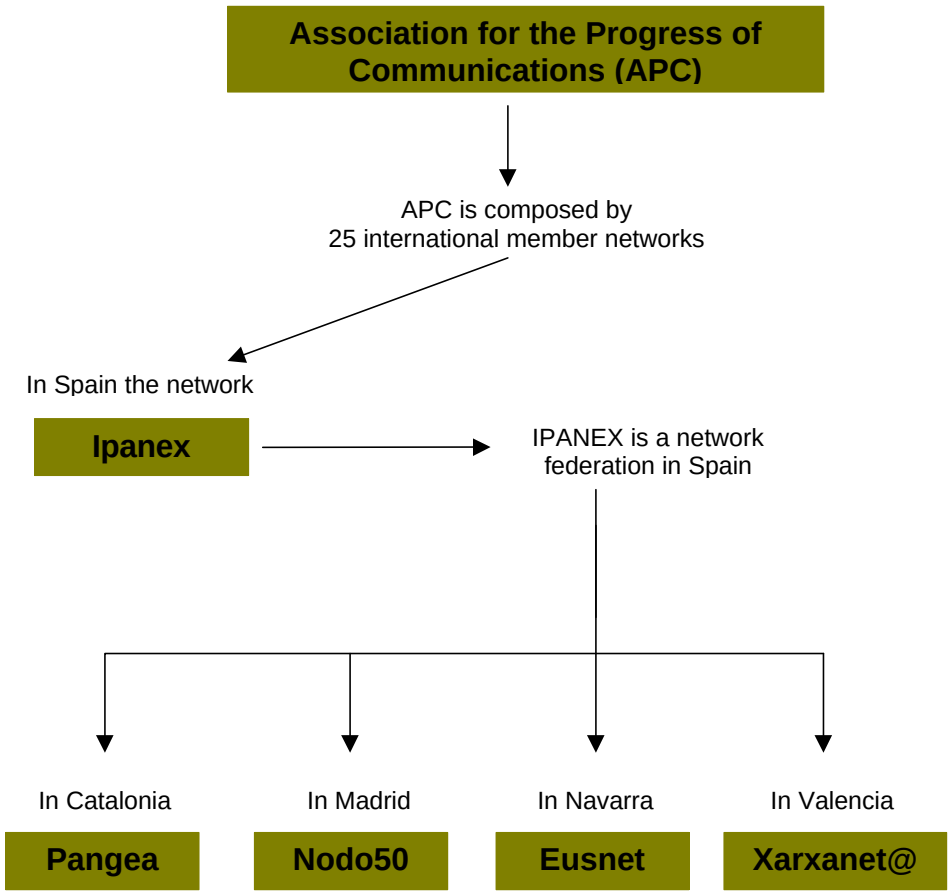
to take advantage of computerised communication and information technologies to get their objectives.

- **Development of information and communication contents and tools**. The objective of this functional program is to develop new products, informative resources and applications to support the development of strategic communities.
- **Defence and promotion**. Its function is to assure the development of the political environment that guarantees that computerised communication technologies are opened and equitable, and that access to information is assured on the part of the civil society, and particularly of strategic communities linked to the objective of social change.

The organisation of APC is represented in Figure 20.

FIGURE 20

Organisation of the Association for the Progress of Communications



Ipanex is the APC network federation in Spain. This network integrates four nodes: Pangea (Catalonia), Nodo50 (Madrid), Eusnet (Navarra) and Xarxanet@ (Valencia).

Pangea “Communication for Co-operation” groups NGO's whose scope of activity is preferably Catalonia, though they can develop part of their action in other communities of Spain and other countries of the world. Its objective is to promote the use of telecommunications and data processing between persons and organisations that work for health, education, peace, co-operation, development and the environment.

Pangea deals mainly with education, women and BCNet, all areas linked to the use of the Internet. The net is centred in private and public conferences of Pangea, Ipanex and APC. These conferences are classified by issues such as the environment, economy, women, human rights, peace, Latin America or Africa. Furthermore, it offers information on its campaigns and activities, provides different agendas (of education in Catalonia, peace, development and interculturality), as well as projects and congresses. Pangea includes also a directory of links to organisations and associations of the network.

Pangea edits an electronic magazine, “Més enllà”, that intends be a discussion platform on present topics to mobilise NGO's and alternative groups of the country. Some spaces are strictly devoted to present issues and others are reserved to the analysis and reflection on social, political and environmental topics that affect the planet. There is also a place for the different agendas that are offered from Pangea, a corner reserved to the groups and NGO's, that can be used as a loudspeaker for their proposals.

A good example of use of the APC global net is the *Conference of Knowledge*, that took place in Toronto from June 22 to June 25, 1997. This conference allowed developing countries and other states to participate in the world economy linked to knowledge, raising a dialogue at the planetary level and creating a vast participant echo between the public and the private sectors.

The organisers wanted to assure that the dialogue and the echo that were created were available not only for those attending the conference, but also for the countless persons from all around the world that could contribute to take good advantage of those efforts. With this objective, organisers worked co-operatively with an important number of entities, public as well as private, to organise a conference in real time in the Internet, parallel to the one that was taking place in Toronto, as well as different virtual meetings presided by the conference participants and other individuals during the twelve following months to the meeting.

These activities were intending, between other objectives, to favour the creation within the developing countries of a lasting capacity within the dominance of the conferences in Internet. Some important efforts were made to encourage regional discussions on the Internet and to develop the potential of the Internet as a means of dialogue, of diffusion, and of development of virtual communities.

4.4.3. The Earth Negotiations Bulletin

Another practical case that has been considered of interest for the purposes of the study is that of the **Earth Negotiations Bulletin (ENB)** (and other actions related to it) produced by the **International Institute of Sustainable Development (IISD)**, as it represents a world wide service of environmental information that uses new technologies and participatory procedures to spread data about the planet's state of the environment.

The ENB is an independent information service that provides daily coverage of the negotiations and development undertaken in the environmental arena at United Nations level.

The Earth Negotiations Bulletin began as the joint initiative of three individuals from the NGO community, who were participating in the preparations for the United Nations Conference on Environment and Development (UNCED) in 1992. The three founders created the Earth Summit Bulletin in March 1992. After publishing daily issues during the five weeks of the Fourth Preparatory Committee meeting for UNCED the three raised funds to publish at the Conference in Rio. Following the conclusion of UNCED the International Institute for Sustainable Development approached the three founders with an offer to continue publishing the Earth Summit Bulletin at follow-up negotiations to the Earth Summit. In November 1992 the Earth Summit Bulletin was renamed the Earth Negotiations Bulletin.

The ENB provides clear and informative balances and objective summaries of the negotiations that take place on environment and development. This service contributes to the transparency of the international negotiations and supplies real time information on decision-making related to the environment and development, through the use of the new and emerging information technologies. It also shows associative actions between governments and non-governmental organizations, thus facilitating negotiations, while it disseminates information on governmental, non-governmental and UN activities at international meetings.

The ENB provides useful information for policy-makers and for all those interested in contributing to the process of policy-development. Furthermore, it maintains a constant information flow on policy-development in other parallel negotiation processes.

The Earth Negotiations Bulletin maintains excellent relationships with the various Secretariats and United Nations agencies responsible for organisation and planning of the 1998 events to be covered by the bulletin.

The Earth Negotiations Bulletin does not participate in meetings as a Non-Governmental Organisation or as media. At all sessions where they provide coverage they are accredited to participate as Staff or Affiliates of the Secretariat. This ensures that their team of writers and editors will have unrestricted access to meetings and delegates. This access is essential to

ensure that the information they provide is "first hand" and unbiased by hearsay. This status is a precondition for the participation of the Earth Negotiations Bulletin at any negotiation.

The Earth Negotiations Bulletin maintains supportive and collaborative relationships with the Non-Governmental Community (NGO). NGO's regularly use the Earth Negotiations Bulletin as a source of information in planning lobbying strategies and monitoring the statements of governments during UN negotiations. Developing and developed country NGO's regularly use portions of the Earth Negotiations Bulletin in their own publications and the Earth Negotiations Bulletin is placed in the NGO computer networks.

Three different formats are used to publish the ENB:

- **A hard copy version**, that is distributed in the negotiations and sent to readers in more than 95 countries.
- **An electronic issue**, that is included in the international computer networks and that arrives instantly to millions of users of thousands of computer networks.
- **A hipertextual issue**, which is incorporated in the World Wide Web Site of the IISD, named *Linkages.*

The Linkages is designed to be an electronic clearing-house for information on past and upcoming international meetings related to environment and development policy. The Linkages WWW project is a unique experiment in international co-operation through the magic of the Internet. Although physically located in Canada, the United States, France, Tunisia and, recently, Kenya and Egypt, the Linkages team members, using various flavours of e-mail, FTP, and late-night IRC chats work together to create in the site a truly virtual and collaborative work environment.

The mission of the International Institute for Sustainable Development (IIDS) is to promote sustainable development in decision-making at international level. It contributes with new knowledge, concepts and policy analysis. Furthermore, it identifies information on the best practices on sustainable development, demonstrates how to measure their progress, and establishes associations to widen these messages. The public and the clients of the IIDS are the companies, the governments, the communities and the individuals interested in sustainable development.

By means of Internet communications, working groups and the activities developed, the IIDS establishes networks to link the concept of sustainable development to practice. This is done through several tools and methodologies among which are:

- **The ENB**, that offers daily information on the most important international negotiations on environment and development.
- **The IISDNET,** that provides general information on sustainable development.

- **The IISD Products Catalogue**, that includes more than 50 books, monographs, disks and conference documents.

The International Institute for Sustainable Development has a new reporting service: Sustainable Developments. It expands the services provided by the Earth Negotiations Bulletin to other meetings, such as conferences, workshops, symposia or regional meetings that would not be covered by the Bulletin. Sustainable Developments provides a timely, professional, high-quality reporting service for these meetings and disseminates the information extensively via the Internet. These initiatives are growing in scope and number and are providing increasingly important inputs into the policy-making process, and the outcomes of these important initiatives should be highlighted and made widely available to all interested parties.

Lately, the ENB has been present at the *II Meeting of the Intergovernmental Forum of Forests* (IFF-2) that took place between 24 of August and 4 of September of 1998 in Geneva. For two weeks, ENB representatives present at the meeting offered daily coverage of all discussions. Previously, background information had been prepared and made available. At closure of the meeting, summaries and conclusions were also prepared and transmitted. By doing so, the ENB agents act both as suppliers and demanders of environmental information: they participate, evaluate, integrate, and transmit environmental information. The ENB minimises the space and time gap between information generation and information transmission.

5. CONCLUSIONS AND RECOMMENDATIONS

The lack of broad social action to modify current institutions and routines in the quest to more sustainable futures is largely due to the conditions which determine both content and form of today's mass environmental communication. The focus of media communication is currently not on sustainability and environmental issues, and when these stories appear, they do so in a manner which does not facilitate understanding nor stimulate specific and timely actions by the general public. Market pressures as well as low levels of environmental education limit both the quantity and the quality of information provided and demanded. Innovative approaches based on new assumptions and practices are needed.

Although the effects of the diverse media on public opinion and agenda setting are complex and depend upon the social context within which the messages are transmitted, so far the media have had little impact on stimulating pro-environmental actions at the macro level. Perceptions are changing but not actions to the same degree. Contemporary social structures are not adapting fast enough -or not at all- to the man-made changes in the supporting ecological systems and in the quality of the environment.

While the amount and diversity of environmental media products, information services, and computer capacity to process environmental data have increased exponentially during the last decade, this development has not been accompanied by a parallel progression in research and development of innovative and original methodologies to present and transmit environmental information. No or little work has been done toward creation of systems and platforms that confer to information a value of use and not of consumption. Only by doing so, and linking information to options and context to action, will society be empowered to act and behave towards sustainability.

The process of integration, and in particular the process of transforming information into communication is a time consuming activity. Time is needed to create the adequate conditions for public debate, understanding and for knowledge to materialise in corrective actions. Time and interactivity are necessary to collect feedback from audiences and to send it back to the sources in a way that can affect the next stage in the production of information. Nevertheless, timely information on sustainability, environmental and potential large-scale risks will have to be mass provided urgently, or at least *before* it is too late to prevent irreversible processes that now could be avoided. Time, space and interactivity constraints to environmental information can be minimised through the use of information technologies as a support of a new model of environmental communication.

In sum, providing the political will and sufficient resources are essential to create the conditions for an integrated mass environmental communication, which could contribute to sustainability. New efforts should not be directed towards reinforcing current media corporations and professions but towards creating new communication systems that ensure the provision of *understandable information* on sustainability and environmental quality issues for a plurality of audiences, in a participatory and interactive context.

Some possible lines of action

Some strategies can help increasing social capacity to use environmental information rather than consume it, thus augmenting their capacity to participate, decide, and behave towards sustainable development. In particular:

- Conceiving, designing and creating “media laboratories” that study, develop, test and implement new communicative methodologies that fit the requirements of the alternative model of environmental information exchange described in this study. These “media labs” should work mainly at the local level, since it is locally where information is better understood and action is principally taken. Therefore, these environmental communication research centres should be integrated in the appropriate institutions at the European level and could be co-ordinated by general research directives and objectives set by a European institution.

- Developing, probably through the “media labs”, appropriate and innovative social communication methodologies which allow the translation of complex environmental data about global and regional processes into intelligible languages and plain formats in order to make them easily understood by citizens in their local contexts.

- Promoting the use of New Information Technologies and specialised media products on sustainability and environmental issues while making them more accessible to the public. These technologies play an important role in the definition of a new and more effective environmental communication model.

- Building and promoting, particularly through the use of the above mentioned technologies, regular forums for discussion, assessment and dissemination of environmental information between formal and non-formal sectors of society. In particular the aim would be to facilitate communication between public agencies, private companies, and Non-Governmental groups, as well as among non-organised interests. Information should be shared among a plurality of economic, political and social agencies.

- Publication of local and regional directories on environmental human resources. The creation and maintenance of accessible national lists of professionals working in the field of environmental information and communication would improve their training and working conditions.

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7. ANNEX I – QUESTIONARY TO EUROPEAN ENVIRONMENTAL JOURNALISTS

1. In your opinion, how do you think environmental issues are reported in the mass media of your country?

a) Not enough.
b) Enough.
c) Too much.
d) Don't have an opinion.

Chose one:
Comment optional: .....
.....
.....

2. If more environmental information were to be forecasted by means of an active policy, which type would you increase:

a) information about environmental policies.
b) information about environmental indicators.
c) information about negative effects of current trends.
d) information about how to deal with those negative effects.

List in order the main two:
Comment optional: .....
.....
.....

3. Of the following environmental issues, which ones do you think currently receive more media attention in your country?

a) Water pollution.
b) Air pollution.
c) Soil pollution and erosion.
d) Waste hazards and conflicts.
e) Overpopulation.
f) Noise pollution.
g) Biodiversity and habitats loss.
h) Destruction of rural countryside.
i) Hazards related to nuclear power.
j) Acid rain.
k) Ozone layer depletion.
l) Depletion of non-renewable resources and energy.
m) Climate change and global warming.
n) Risks related to biotechnology.
o) Sustainable development.

List in order the main three:

Comment optional: .....
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.....

4. And of the above listed environmental issues, which ones do you think SHOULD currently receive more media attention now in your country?

List in order the main three:
Comment optional: .....
.....
.....

5. Some studies have revealed that environmental information in some countries is relatively small in comparison to other kinds of information, such as sport, economics or politics. Why do you think it is so? Is it maybe because environmental information:

a) is boring.
b) is depressing.
c) is difficult to understand.
d) has little to do with important things in people's daily life.
e) is interesting to people, but they can do little or nothing about it.
f) affect interests of politicians so they put pressure to avoid it.
g) affect interests of private companies so they put pressure to avoid it.
h) newspapers are afraid of losing sales, and TV of losing audiences.
i) reporters do not know what to say.
h) Because of other reasons, see comment.

List in order the main three:
Comment optional: .....
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.....

6. To your view, which means is most widely used by the public in your country to obtain environmental information?

a) Newspapers.
b) Television.
c) Radio.
d) Specialised books and magazines.
e) Informal conversations with friends, family or colleagues at work.
f) Public talks or conferences at schools or at University.
g) I do not have an opinion.

-List in order the main two:
Comment optional: .....
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.....

7. And which one of the above means of communication provides the most credible environmental information?

a) Newspapers.
b) Television.
c) Radio.
d) Specialised books and magazines.
e) Informal conversations with friends, family or colleagues at work.
f) Public talks or conferences at schools or at University.
g) I do not have an opinion.

List in order the main two:
Comment optional: .....
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8. In your opinion, who do you think produces o influences more the production of environmental information in your country?

a) Professional reporters, by its own initiative.
b) Governmental organisations.
c) Non-governmental organisations.
d) Industries and private companies.
e) Newspaper and TV editors.
g) I do not have an opinion.

List in order the main two:
Comment optional: .....
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.....

9. According to your view, which are the main difficulties that reporters face when dealing with environmental information?

a) Lack of events to be reported.
b) Lack of places to publish.
c) Lack of public funding.
d) Lack of experts' opinions.
e) Lack of plural points of view.
f) Lack of citizens' interest.
g) Lack of citizens' knowledge.
h) Lack of reporters' specialist training.
i) Lack of appropriate information technologies.
j) Lack of independent institutions to help reporters.
k) Political pressures against it.
l) Economic pressures against it.
m) Editors' reluctance.

-List in order at least the main three:

Comment optional: .....
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.....

10. In your opinion, environmental information should deal mainly with:

a) Objective facts and processes according to scientists.
b) Opinions of environmentalist groups.
c) Governmental and official information.
d) Different points of view, even if contradictory.

List in order the main two:
Comment optional: .....
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11. To your view, good environmental information implies that it is:

a) objective.
b) plural.
c) not sensationalist.
d) informative.
e) clear.
f) appealing to the public.
g) action-provoking.
i) other, see comment.

List in order the main two:
Comment optional: .....
.....
.....

12. In your opinion, most of environmental information in your country appears in:

a) the local mass media
b) the regional media.
c) the national media.
d) do not have an opinion.

Chose one:
Comment optional: .....
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.....

13. And at which level should this environmental information mostly be provided?

a) at the local level.
b) the regional level.
c) the national level.
d) do not have and opinion.

Chose one:
Comment optional: .....
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14. If new political measures were going to be undertaken to promote mass media environmental information, which ones would you agree the most in?

a) Imposing minimum quotas of environmental information in some mass media.
b) Subsidising environmental information in some mass media.
c) Promoting university training for reporters.
d) Stimulating reading environmental media at school.
e) Creating independent institutions to promote environmental media.
f) Other, see comment

List in order the main two:
Comment optional: .....
.....
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15. Which of the following means would you promote more as a way of providing environmental information?

a) Nature documentaries.
b) TV and radio debates with experts and lay people.
c) Specialised regular environmental current affairs programmes.
d) Call in TV and radio programmes
e) Written articles in the general press
f) Written articles in the specialised press
g) Internet (web pages, chats, etc.)
h) Environmental focused exhibitions
i) Other, see comment

List in order the main two:
Comment optional: .....
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16. Please answer the following questions by choosing a number between 1 and 9, meaning *"1 = very little"* and *"9 =very much":* In your view, do current mass media when dealing with environmental issues...?

a) increase people's information about environmental problems.
NUMBER:
b) increase people's concern about environmental problems.
NUMBER:

c) increase people's willingness to do act environmentally friendly.
NUMBER:

d) increase people's willingness to support environmental policies.
NUMBER:

e) help societies to increase their sustainability.
NUMBER:

Comment optional: .....
.....
.....

17. In your opinion, which are the main and the best SOURCES of environmental information in your country? (you can cite two o more in order)

a) **THE MAIN SOURCES USED:**

-
-
-

b) **THE BEST SOURCES USED:**

-
-
-

18. Do you know of any relevant article or book dealing with the subjects of environmental information and communication in your country?. Please list if you do:

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