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The Internet and its potential for an efficient environmental communication

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Abstract. The paper starts from the premise that the stakeholders regarding environmental issues in Romania do not extensively use Internet tools for environmental communication. The paper highlights that the Internet provides numerous benefits for communication of environmental Information and thus contributes to a better conceptualization and operationalization of the Internet as an efficient complementary solution to conventional environmental communication. The discussion reveals the authors' belief that using the Internet effectively, as a public information medium, in regards to environmental issues, requires a good understanding of its marketing and communications potential. The paper exemplifies some concrete ways to use the Internet for research, communications and information dissemination in regards to environmental issues. As a result, the authors' approach can represent a fresh perspective on the online environmental communication techniques and strategies, which might be of interest to students, researchers, NGOs, production companies and local or central authorities that deal with environmental issues etc.
Key Words: Internet, environmental communication, environmental stakeholders, potential, benefits.

Introduction. In the past years, the public use of the Internet in Romania has increased dramatically. As a result, considerable progress has been definitely made on the Romanian "online environment" in regards to aspects like: e-commerce, online marketing, academic research etc (Adam 2011).

Between 2008 and 2012, Romania recorded one of the highest growth in the European Union, in terms of proportion of households with broadband connections to the Internet (more than 30 percentage points) (Seybert 2012).

The rapid penetration of the Internet in Romania is also explained by the impressive degree of interest the Romanians have for the Internet (around 80%, according to the 2011 IRES study) (Marginean 2011).

This brought an important opportunity to the Romanian public, namely the access to an enormous repository of information exceeding dozens of billion of characters. Online institutional repositories and extremely powerful search engines have enabled the access to useful scholarly, artistic or scientific materials (Drake 2004).

In terms of environmental communication, the large-scale evolution of the Internet in Romania and the computer integration into educational activities (Istrate 2007) also meant: strengthening contacts among environmental specialists, both national and international ones; exchanging ideas and experiences with respect to the Internet available environmental information resources; accessing the latest information regarding environmental friendly technologies and many other benefits.

It was a matter of time for the environmental Internet campaigns to occur (Keys 1996). Whether authorities, NGOs or other stakeholders, they all seemed interested in developing information campaigns on the Internet or in exchanging information over the Internet. Unfortunately not everyone knew how to do these things in a professional and efficient way, because many of them acted solely on their impression that those who communicate through the Internet do not need any special knowledge and guidance

(Talpos & Chis 2011). On the other hand, important technical details were also treated lightly (hardware requirements/servers; copyrights and data protection issues etc).

As a result, many environmental campaigns have not achieved their objectives, leading to the decline of the enthusiasm about the use of the Internet in environmental communication. Besides that, the online environmental communication was also confronted with two major problems: credibility of content and the poor management of multidisciplinary systems (Van House 2004).

This altered perception of the Internet communication is now about to be overcome by many environmental stakeholders, because they understood that effective communication on the Internet is not random (Talpos & Chis 2011).

On the assumption that every Romanian citizen is entitled to access environmental information in order to shape their knowledge about the environment, Internet has become one of the main tools in disseminating this kind of information. This is due to the "participatory" character of the Internet, which allows individuals to become active parts of the decision making process concerning the environment (Nistor 2010). Environmental stakeholders have to acknowledge this fact, in order to achieve a successful web communication.

This paper provides an in-depth understanding of current Internet-based environmental communication practices. As such, the paper might represent a necessary step towards the setting of new theoretical perspectives for analysing web-based environmental communication practices.

Material and Method. The best method to make sure that the Romanian network of environmental information consumers will benefit of professional Internet environmental initiatives is to help each category of stakeholders become aware of the almost unlimited potential of the web for environmental communication.

Besides that, specific online environmental communication techniques and instruments should be shared with those stakeholders, to allow them develop efficient ways for simultaneous interaction with multiple types of Internet users: creators, critics, collectors, joiners, spectators and inactives (Von Brockdorff 2012).

Firstly, the environmental stakeholders (governments, regulators, customers, competitors, community and environmental interest groups) (Delmas & Toffel 2004) should know that, from its position of mass communication medium, the Internet generally allows four categories of communications (Table 1) (Morris & Ogan 1996).

Table 1

Categories of Internet-based communication

One-to-one asynchronous communication (for example: e-mails)	Many-to-many asynchronous communication (for example: electronic bulletin boards)
Synchronous communication than can be one-to-one, one-to-few, or one-to-many and that is usually organized around a certain topic (for example: chat rooms on commercial services)	Asynchronous communication that involves many-to-one, one-to-one or one-to-many source-receiver relationships, characterized by the receivers need to seek out the site in order to access information (for example: web-sites, gophers and FTP sites)

Depending on their type and on their environmental objectives, the stakeholders should carefully choose the right way to communicate with their targeted audience through the Internet. Besides that, the stakeholders should not forget the fact that environmental messages become much efficient if the two parts (the transmitter and the receiver) have "shared visions" (Lundgren 1994).

The main categories of environmental stakeholders in Romania are: environmental specialists, central or local authorities/agencies, NGOs, universities and specialized colleges, environmental protection volunteers militants, firms performing activities with environmental risks, mass-media etc (Figure 1).

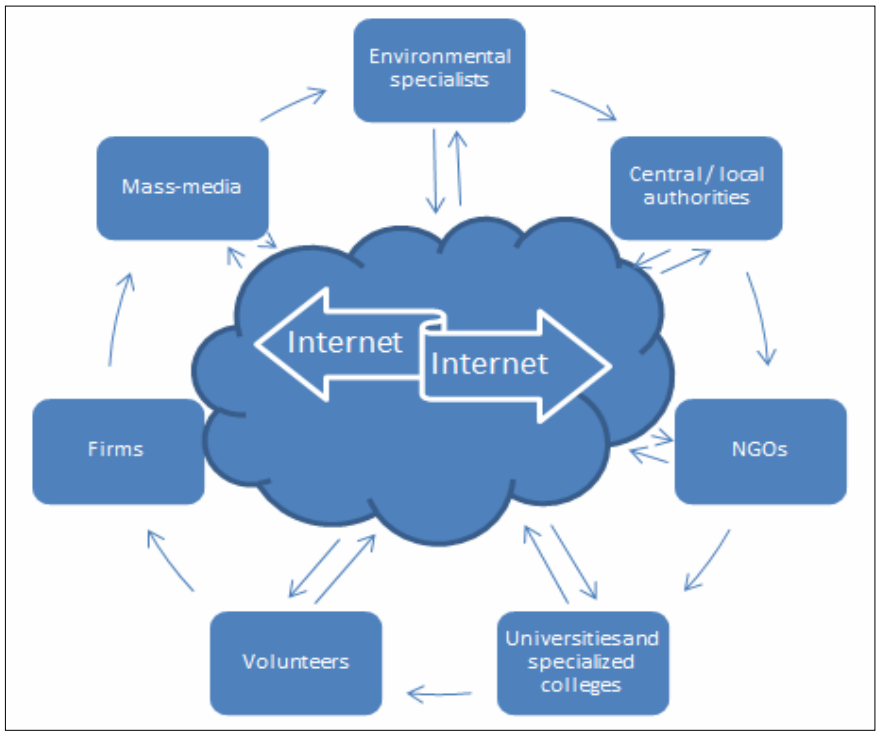

Figure 1. Environmental stakeholders and the Internet.

The environmental communication (seen as a link process between sources and the recipients of environmental information) (Pillmann 2002) covers a wide range of topics. In fact, the practice of communication falls into few broad categories (Cox 2012).

Environmental rhetoric – scholar studies on environmental issues that aim at influencing the public's views about the environment can now be easily posted online. With the help of Internet tools, environmental distance learning experienced a developmental milestone. As recent studies conducted in Romania show, people are perceptive to this kind of learning method and they use it to gather information, express ideas and form opinions (Stoica et al 2012). Special e-learning online platforms can now be implemented, in order to give access to quality online environmental education to various social classes. Stoica et al (2012) also pointed out the increasing role of weblogs in information dissemination and their implementation as an educating tool – an aspect which should not be overlooked by environmental communicators.

Internet can also be very efficient in developing public education campaigns. For example, a pragmatic function of Internet mass communication occurs when an environmental stakeholder needs to educate the public in regards to the protection of a certain natural ambiance.

Disciplinary lines have long kept scholars from seeing the whole picture of the environmental communication process. In this context, the proper use of Internet technologies in the field of environmental education might represent an important step towards an interdisciplinary environmental education (Huiying 2003). An effective interdisciplinary alliance between communications and the environmental sciences can't be done without the help of Internet.

Public participation in environmental decision making - democratic decentralization, in the context of community engagement has emerged as a strategic theme for most of the modern public services' policies (Blake et al 2008). The significant involvement of citizens in the decisions that affect their communities or the natural environment should be an important goal for any government in the world. With the help

of Internet, the communication between governments and citizens can get new and extremely useful valences. Governments can implement websites with functions that allow online feedback from citizens. Such websites can also be a very useful repository of information such as: public administrative information in regards to different governmental environment agencies; government publications (laws, regulations etc); stage of processing environmental cases; work program of environmental institutions etc. Some of the advantages brought by such an Internet instruments are: reduced costs, because the electronic publication is cheaper than the classical one; easy (24 h/day) update of the posted information; reduced "paperwork"; direct links to other institutions; online answer facilities etc. (Federal Ministry for Environment, Youth and Family – Austria, 1996).

Environmental conflict resolution – Internet represents a good alternative solution of resolving environmental conflicts, because Internet offers easy ways to bring disputing parties together (for example: blogs, debate sites, forums etc). The Internet already hosts the so-called “cyberaries”, which are web archives containing important volumes of information regarding both causes of conflicts involving environmental concerns and possible solutions to certain environmental conflicts. For example, the Watson Institute of Brown University has its own “cyberary” that emerged from a seminar on environmental conflict resolution. The postings hosted by the “cyberary” come from papers submitted as part of that seminar. The “cyberary” was subsequently expanded to include some international online circulation working papers (http://www.uvm.edu/~shali/ecr.html). Today, knowledge portals are using various concepts of arrangement to efficiently organizing the information on the portals, so that the information is easily accessed and managed (Bhojaraju 2007).

Environmental journalism – recent years have shown that as true as the statement according to which peoples’ interest in regards to different environmental issues keeps the environmental journalism “alive”, is the assertion that the role of an environmental journalist has changed in the era of social media (Sachsman et al 2010). The news posted on environmental media platforms can portray environmental problems in a way that affects the public attitudes. Studies in environmental media are proving that online news is gaining ground every day. Facebook is already hosting hundreds of profiles created by environmental advocacy groups, that militate for diverse environmental causes, and that facilitate the spreading of specific online news.

Environmental social marketing campaigns - these campaigns attempt to inform and educate, to change attitudes, and mobilize support of the public for a certain cause (for example: to protect a wilderness area or to convince the government to raise the fuel efficiency of cars etc). With the help of Internet instruments, namely: online social media platforms; e-mail campaigns (information distributed via electronic mailing lists); online forums etc, environmental stakeholders find efficient ways to communicate with the public.

Building an efficient social network platform takes time and a lot of commitment (Lee 2013) but it offers a huge potential in terms of environmental social marketing campaigns and increased visibility in the targeted audiences. Without proper integration of social networks in the traditional social marketing communication plan, supplemented with the willingness to invest proper time and human resources, environmental stakeholders will not get from their social network presence the expected results.

In order to transform the social networks into a powerful marketing tool the published information must be relevant, updated and of interest to the diverse categories of targeted public. An environmental stakeholder once entered in social networks should be aware that its image is at the discretion of the Internet users. This can represent both an opportunity and a major risk (Talpos & Chis 2011). As such, the decision to enter the social networks should take into account both positive and negative aspects (Figure 2).

Probably the most important advantage that the use of Internet and social networks platforms brings to the environmental stakeholders is the fact that such communication channels offer the chance of processing and disseminating relevant information at lower costs and with great rapidity (Mijoska & Jovevski 2009).

Pros	Cons
• **Unlimited market's size** – the absence of geographical limitations in terms of information delivery is the main advantage that the social networks bring. Social networks also eliminate the distances between environmental stakeholders and their audiences all over the world; • **Precise market segmentation** – the social networks allow very efficient market segmentation, based on criteria such as: geographical, social, demographic, ethnic or religious, ensuring that the message reaches precisely the targeted audiences; • **Information's velocity** – information travels very fast and its speed increases exponentially from one user to another, in direct correlation with the number of connections each and every user has; • **Better loyalty towards an environmental** cause – by being present on different social networks, environmental stakeholders can reward Internet users and convince them to become loyal by offering them certain advantages (for example: T Shirts, CDs etc); • **Easy feedback** – environmental stakeholders can benefit from a quick and easy capture of information on public's behavior, which will help them improve their campaigns; • **Versatility** of the communication forms offered by the Internet.	• **Considerable time resources** – giving feedback to Internet users, creating, editing and publishing information in order to post it on the social networks involves considerable time resources; • **Personnel risk** – a proper environmental communication campaign on social networks is generated only if the environmental stakeholders publish interesting and professional materials for the public. Such ability totally depends on the skills, experience and dedication of the staff charged with the social networks based campaigns; • **Security risk** – publishing information on the Internet is doomed to be subject of a threat that comes from spammers or hackers who aim spreading viruses, obtaining personal information from the environmental stakeholders' audiences; • **Public criticism** – messages published on social- networks are at constant risk of being criticized or misinterpreted by dissatisfied or misinformed Internet users and all of that happens in front of the whole virtual community; • **Information's obsolescence** – rapid obsolescence of the posted information is a characteristic of each and every social network. • **Overload risk** - as social media technologies are increasingly used , the consequences of the information overload clearly exists in every social network; • **Poor quality of information** – ambiguous, false or exaggerated information can be poste don social networks by malicious people.

Figure 2. Pros and cons of social networking (Talpos & Chis 2011).

Risk communication – Internet risk communication encompasses a range of practices, such as: e-mails, pop-ups, online news, Internet television, sms communicator platforms etc. With the help of Internet tools, environmental risks can now be operatively communicated to the affected audiences. Whether you need to transmit text or images, in order to make your announcement credible, the Internet tools offer the most efficient solutions. User generated content already proved its utility during natural disasters, such as wildfires and hurricanes in the Americas (Sutton et al 2008). People affected by the natural disasters are eager to find out more about the situation that occurred in their region and in the neighboring regions. These are the situations where Internet based communication/social media becomes very handy: it allows citizens both to inform

themselves and to inform others by simply twitting, chatting or discussing matters on multiple forums. This form of citizens' involvement shouldn't be neglected, because it often offers an in-depth look of the severity of the problem, which can improve the efficiency of the disaster response efforts. With the help of Internet, photo-sharing also became a useful tool in risk communication; even mainstream media is relying more often of photography's made by eye-witnesses (Liu et al 2008).

Early warning systems have also evolved in the "digital world". In terms of risk communication, probably the most interesting Internet technology based communication tool is the system of "Environment Telematics" (Federal Ministry for Environment, Youth and Family – Austria 1996). Such a system allows automatic warnings because it integrates sophisticated monitoring tools of pollution levels in the atmosphere, rivers or sea. "Environment Telematics" is being used in various domains, such as: industrial plants, urban areas, coastal areas or river basins.

As mentioned above, the benefits that the web has, in terms of communication purposes, are superior to those of conventional print media (Simms 2005). The web is a "richer" medium for environmental communication, when compared to conventional print media.

Until recently, many mass communications specialists have overlooked computer-mediated communication in general and the Internet in particular. They preferred, instead, to stay with the traditional forms of broadcast and print media that fit much more conveniently into their models of mass communication (Morris & Ogan 1996). Unfortunately for those mass communications specialists, the Internet has become impossible to ignore, after millions of people started communicating daily over the Internet (Gromov 2002).

However, there are researchers (Newman 2011) that show in their studies that the traditional media kept his role as "agenda-setter", because the majority of the web-based news exchanged or commented between Internet users result from these conventional media products, so social media is, in fact, more of a "filter and amplifier" of the mainstream media.

Although opinions are divided, the impressive potential of the web for environmental communication cannot be denied, and has many favorable features compared to mainstream media, such as:

- immediacy - information disseminated on the Internet can be easily and regularly updated.
- high feature "informativeness" - web presented information is flexible and visible, but even more important than that, it provides multiple cues for disseminating information;
- the multiple ways of organizing the information – on the web, information can be efficiently organized, with the help of links/hyperlinks and menus. As such, an increased quantity of information can be provided. Besides that, information can be offered in different file formats, according to the download possibilities of the Internet users;
- opportunities for customization of information - with the help of hyperlinks and menus, information can be differentiated, according to the specificities of each environmental stakeholder. Besides that, personalized information can be easily provided to the stakeholders through email lists;
- addressability - web posted materials are available to anyone with Internet access.
- public relations management facilities - the web allows the use of log analysis software and hit counter facilities in order to keep a record of readers of the website. Dynamic and complex reports can easily be made by accessing the archives of a website;
- search facilities - on the web, different menus and hyperlinks, or even search engines make navigation and management of information very easy;
- feedback facilities - Internet mechanisms for obtaining feedback, such as automatic feedback forms, bulletin boards or emails are a daily reality. As such, web allows a two ways interaction with the public;
- costs management - web materials involve reduced costs because advertising materials can be easily posted and updated, whenever necessary;

- working hours - web posted advertising materials have 24 hours availability, 365 days a year (Sumit 2006).

Internet based environmental communication mediates perceptions, actively shapes the public understanding, creates meaning, and, eventually orients the citizens towards a certain course of action. Internet communication has become a priority for many research and policy institutions, a concern for both private and public bodies, and an established subject for all forms of education (Bucchi & Trench 2008). Internet engages the public in environmental communication through online conversations, debates, or questioning, about topics of common interest.

With the help of Internet, the public comes into being a part of the everyday conversations about the environment. In order to do that, Internet based environmental communication uses much more than words: editorials, speeches, Internet TV newscasts, Multimedia,visual and nonverbal symbolic actions (for example: web banners, YouTube videos, photographs etc.) as can be seen in Figure 3.

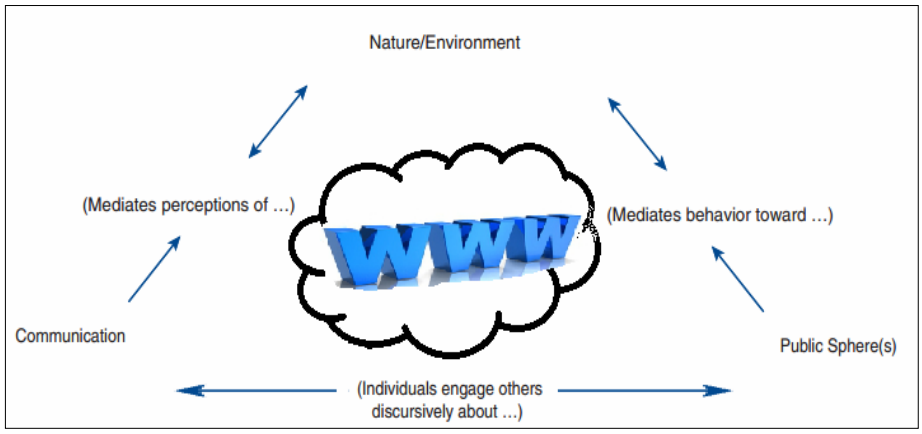

Figure 3. Internet, nature, communication and the public sphere (Cox 2012).

Conclusions. The Internet is about to become the most important environmental information repository in the world. The Internet already concentrates million of characters in regards to environmental subjects such as: air/soil quality, climate, surface and ground water, but also socio-economic environment data and biotic (fauna and flora) information.

Internet technology allowed the development of highly efficient environmental management tools that improved decision making, because of the interconnection and improved accessibility of environmental information brought by the international Internet based networks and data bases. As such, Internet technologies can become a key enabler of “green growth” in all sectors of the world’s economy. Despite its diverse range of topics, Internet based environmental communication has to be pragmatic and not confusing, as it is sometimes. It should educate, alert, persuade, and help the citizens and the authorities in solving environmental problems.

Through the exploitation of advanced Internet communication tools, in the context of an incredibly rapid development of the modern Information Society, environmental projects that will be initiated will certainly offer better services for citizens, environmental managers and decision makers. On other words, in their most effective form, environmental information services, based on Internet technologies, will give citizens the opportunity to personally participate in environmental protection.

Nevertheless, the measurement of the environmental impacts of “e-green” communication tools remains an important issue to address, because such an initiative involves diverse methodology and a transdisciplinary approach.

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