

PRACTICES ON e-NVIRONMENTAL REPORTING

*Giuliano Noci, Annalisa Citterio
Politecnico di Milano, Dipartimento di Ingegneria Gestionale*

Due to stakeholder' s increasing demand for information on environmental topics, a company's communication strategy should be judged as a competitive and strategic issue to spread its "ecological" behavior and to declare its proactive approach to safeguard the environment, to protect employees' health and to ensure their safety.

Communicating environmental issues in a clear and reliable way is the main key to obtain actual benefits, internally to make the employees acknowledged for their environmental responsibility and externally to develop a constructive interaction with stakeholders.

The complexity and multi-disciplinary of environmental issues make company's communication very difficult to estimate exactly all the activities undertaken to improve its performance reaching sustainable development.

During the last few years, the widespread of internet technologies and services encourages companies in using the Web as a new reporting channel, exploiting all the related benefits.

This paper analyses which are the main characteristics and benefits of an environmental web-based report and, through the empirical investigation considering a sample of companies working in environmental-sensitive sectors, aims at finding the most common evolutionary trends both in short and long term, for companies reporting environmental issues and performance.

1. Introduction

Environmental reporting is the description of the several ways by which companies reveal information on their environmental actions; while corporate environmental reports (CERs) are just one type of environmental reporting defined as publicly available, stand-alone reports issued voluntarily by companies on their environmental activities (Brophy and Starkey, 1996).

A lot of organization such as Public Environmental Reporting Initiative (PERI) and Coalition for Environmentally Responsible Economies (CERES) have published various guidelines for voluntary environmental reporting since the beginning of the nineties (some of them are downloadable from relative websites) and dozen of other organizations have developed recommendations, standards or guidelines as well (i.e. Advisory Committee on Business and the Environment; the European Chemical Industry Council; European Green Table; Global Environmental Management Initiative; Global Reporting Initiative).

These documents are structured as checklists suggesting the contents that a CERs should include from qualitative and quantitative information to monetary and non-monetary data.

If a company can demonstrate good environmental performance and an acceptable level of environmental liability to its stakeholders, it may benefit financially in that its share price may increase. Potential strategic benefits include improving the company image and building better relations with relevant stakeholder groups (Brophy and Starkey, 1996).

The key reasons companies should realize an environmental reporting strategy could be:

- (i) introduction of mandatory reporting in certain countries (Norway, Sweden, Denmark, The Netherlands, USA, Canada, Australia);
- (ii) requirement of the EU Eco-Management and Audit Scheme (EMAS);
- (iii) outcome of the corporate policy;
- (iv) pressure from stakeholders.

CER is becoming more and more the business standard, especially among global players, multinationals and international operating companies with a relatively large environmental impact such as in the electronics, automobile manufacturing, mining, pharmaceuticals and chemicals sectors (Isenmann R. and Christian Lenz, 2002).

According to what showed above, environmental reporting can be considered a well-established method of communication, in terms of contents; what it is changing is the medium companies use to present all the environmental information.

It is of great consequence for an effective and complete communication strategy to remember that each stakeholder group has different requirements for detailed information, so in order to achieve all of them a company should wonder different kinds of communication tools.

They can take advantage of the benefits of ICT applications in order to present a CER that is interactive and customized.

CER in electronic format is a common distribution way that includes e-mail, floppy disk, CD-ROM and the Web. Recently it is increasing the use of the company's institutional website as a channel for environmental performance reporting.

In a few words electronic publishing over the Web is a viable, cost-effective, complementary and powerful communications tool (Skillius Å. and Wennberg U., 1998). It is important to underline that printed and electronic reports should combine together in order to offer a more efficient communication strategy.

Comparing the different publishing media (see table 1) in the ways they are commonly used, it is simple to find which are the best communications tools in terms of more potential resources.

	<i>Text</i>	<i>Still images</i>	<i>Moving images</i>	<i>Sound</i>	<i>Two-way interaction</i>
Print	✓	✓			
Video tape		✓	✓	✓	
Audio tape				✓	
E-mail	✓	(many e-mail users receive text-only e-mail)			
CD-Rom	✓	✓	✓	✓	✓
Website	✓	✓	✓	✓	✓

Table 1 – Key capabilities of publishing media (ACCA, 2001)

Focusing the attention on the Web as a way to communicate company’s environmental performance, it can increase the public access and make it more comfortable for users, allowing them to download published material, and eventually print it, if needed.

Commonly company environmental reporting on the Web is accessible in PDF or HTML format:

- PDF (*Portable Document Format*) files can be viewed with the free Adobe’s Acrobat Reader, they can be displayed or printed in the same form of the pages that appeared in the publication (including richly formatted text, graphics, and colors);
- HTML (*Hyper Text Mark-up Language*) is the common file format used on the Web, whereby the content appears on linked pages viewed through Web browser software.

2. Features of a Web-based environmental report

The principles companies have to follow in the report redaction play a key role toward stakeholders it is addressed to. According to the *Sustainability Reporting Guidelines* (GRI, 2002), the main characteristics of a CER should be:

- transparency: communicate full disclosure of the processes, procedures and assumptions;
- inclusiveness: engage its stakeholders to help focus and continually enhance the quality of its report;
- auditability: report data and information that should be recorded, compiled, analyzed and disclosed in a way that would enable internal auditors or external assurance providers to attest to its reliability;
- completeness: report information in sufficient detail in a manner consistent with the declared boundaries, scope and time period;

- relevance: assign importance to a particular aspect or indicator to inform the user's decision-making process;
- accuracy: achieve the degree of exactness and low margin of error in reported information;
- neutrality: avoid bias in selection and presentation of information and strive to provide a balanced account of reporting organization's performance;
- comparability: disclose any change and re-state previously reported information;
- clarity: make information available in a manner that is responsive to the maximum number of users while still maintaining a suitable level of detail;
- timeliness: provide information on a regular schedule that meets user needs and comports with the nature of the information itself.

In accordance with these well-established, widely and traditionally accepted reporting principles, new elements (strictly related to a web-based report) have to be considered (ACCA, 2001):

- **BROWSING FACILITIES:** clicking the mouse on an entry in a contents list may produce a menu through which all sub-sections can be listed and accessed. Navigation is made easier when visited links change color to indicate those parts of the site that have been visited.
- **SEARCH FACILITIES:** larger websites frequently include a facility to reach specific information. These internal search engines, which can work in the same manner as the large, independent search engines that catalogue the entire Web, quickly explore a site looking for a particular topic.
- **SITE MAPS:** site maps provide a diagrammatic summary of site contents, illustrating structure used to organize information.
- **LOCATION:** most environmental information is usually accessible through the "Company Info" or the "About us" buttons on the home page of the corporate website. For companies reporting only through the Web, it is essential that users' environmental sensitive information is easily accessible.
- **PREVIOUS YEAR'S REPORTS:** many websites store previous years' report, available for downloading from archives page.
- **HYPERLINKS:** these are the basic building blocks of websites. Hyperlinks may be buttons, images or text, which, when clicked on, jump the reader somewhere else. Hyperlinks can be of two types:
 - internal (link to other pages within the same website): they can be used to demonstrate improvement, by linking sections of the current report to sections of previous year's reports. They can also provide a link to other corporate communications, such as annual report and accounts.

- external: link to partner organizations or sites where related information can be found.
- DIFFERENT LANGUAGE VERSIONS: Web reports can be made available in several versions to match the languages of the major audiences, at minimal cost.
- REGULAR UPDATES: Web publishing allows companies to update the information within their website more frequently. Performance data would ideally be “real-time”, within the reader able to view the company’s updated current performance. In reality, the costs of presenting real-time updated data, even if on-line, would be probably prohibitive. The most frequent performance updates tend to be quarterly progress reviews.
- FORUMS, BULLETIN BOARDS AND FEEDBACK FORMS: Internet allows two-way dialogue: through a dedicated Web page forum or bulletin board, interested users can present their comments on the report. Web reporting offers an opportune to increase the response rate (that is 1-2% for hard-copy reports) by making it easier and quicker for users to submit feedback
- MULTIMEDIA ELEMENTS: these can include conference speeches, television interviews and radio discussions. Hearing senior management talking in detail about the policies and commitments outlined in their reports can send a powerful message, reinforcing the assurance that the company is taking these issues seriously.
- ADDITIONAL DOCUMENTS: due to the large on-line information storage capabilities, report users can find in the web-pages additional documents and large quantities of data.
- UNUSUAL INTERACTION ELEMENTS (e.g. quizzes and games): Web reports can feature interactive quizzes and games related to environmental issues, in order to focus reader’s attention.
- ON-LINE ORDERING: the company website can include facilities for ordering hard-copies of the report or any other corporate communication publications.

After listing the features strictly related to the principles of a report redaction and to the elements of a Web-based report, some considerations about environmental issues that should be included needs to be done, even if it is not the main purpose of investigation in this paper.

A lot of documents and guidelines help company listing the potential topics and indicators to be used in order to communicate in an effective way its environmental performances. The environmental dimension is related to the company’s impacts on ecosystems, land, air and water. Environmental indicators should be relevant, measurable and comparable, aiming at evaluating company efficiency and effectiveness in achieving environmental objectives (Skillius Å. and Wennberg U., 1998).

The main environmental indicators concern:

1. materials usage;
2. natural resources (energy and water) consumption;
3. emissions, effluents and waste;
4. compliance with all applicable regulations.

Each company can include other issues related to its environmental/sustainability improvement, including social performance measurements or workers safety statistics, in order to communicate its performance in the most complete way.

3. Web-based report or paper-based report?

From the analysis of many documents recently published (Noci G., 2000; Shepherd K., Abkowitz M. and Cohen M.A., 2001; Wheeler D. and Elkington J., 2001), it seems that a Web-based report offers companies potential benefits, but as a communications medium it also has disadvantages.

The technical benefits using the Web are often declared by several authors and mainly concern:

- reducing environmental impacts of publishing (energy, pulp and ink-use);
- facilitating data updating;
- making the information available to a wider audience;
- profile the audience, e.g. who reads and what parts of the report are read;
- supporting managers in efficient benchmarking based analyses
- facilitating a dialog between stakeholders and company;
- allowing viewer to choose level of detail.

Though these benefits, there are also some disadvantages: the geographical availability of Web access is often overstated: in 2001, only 8,6% (<http://www.zooknic.com>) of the world's population were estimated to have access to the Internet, with most of these in the northern hemisphere. The Web, as a medium, may not be the universal solution it is often assumed to be.

Other drawbacks are related to the costs of maintenance and updating the CER and the ones related to downloading time; hide in the website; lack of site promotion; not specify how current the data and information are; not encouraged dialogue with the stakeholders; not personalized; overwriting each year's report with the next one (inability to compare statements, targets and data between different year). (Scott P. and Jackson R., 2002)

As already reported, tailored information is more and more required to companies reporting their environmental performance because stakeholders are becoming more critical and focused on their information needs and managers will benefit from CERs as a "green management tool" in order to create internal and external value.

4. Empirical investigation

The objective of this empirical study was to investigate the most frequent trends characterizing environmental reports on the Web, analyzing the application of basic Web-based elements influencing corporate environmental communication.

The empirical study focused the attention on web-based environmental reports published by firms in four main sectors (Motor vehicle & parts; Chemicals & Pharmaceuticals; Petroleum Refining; Electronic & Electrical Equipment) operating in US and Europe.

<i>Sectors</i>	Environmental reasons
<i>Motor vehicle & parts</i>	emissions resulting from car usage and recycling of end of life products
<i>Chemicals & Pharmaceuticals</i>	high environmental risk of their activities under pressure from external stakeholders
<i>Petroleum Refining</i>	damage caused to the eco-system by extraction/refining
<i>Electronic & Electrical Equipment</i>	take-back and recycling of end of life products

Table 2 – Reasons explaining the choice of the sectors

The sample includes the first 5 companies for each sector in the ranking of Global 500 list (Fortune) for US and of Global 500 list for Europe (see Annex 1). The motive for choosing US (compared to Europe) is that American companies seem to be more sensible to environmental problem and are worldwide recognized as web-pioneers.

The intensive analysis of Web-based CERs of the sample companies is built on an investigation (2002) on the structure and format of environmental reporting and on the main environmental topics included. The different aspects considered are:

1. on-line attendance of the corporate environmental report;
2. format (pdf or html);
3. designation (i.e. corporate environmental report, EHS report, sustainability report, other);
4. visibility (no. of click from the home page);
5. downloading time (minutes);
6. updating frequency;
7. frequency and quantity of publications;
8. interactivity with stakeholders;
9. multi-version depending on which stakeholder is reading;
10. economic and EHS information.

The sample firms is made of 39 companies, 20 of which are located in US and 19 in Europe; most of them are multinationals and international operating companies with more than 50,000 employees. Most of the companies (30) has a Web-based CER; the format used is pdf (that is a different way to display the paper-based environmental report published by the company), but the most common manner (16) to communicate on the Web is to use both html and pdf formats. In many cases companies use pdf format to show their paper-based report and html format to highlight some topics they want the reader put the attention on (e.g. policy and objectives, successful environmental indicators).

There is not a common way to name the CERs: from “Environmental” to “EHS”, from “Sustainability” to “Social and Environmental” Report. The analysis did not identify a prevalent designation per sector; it depends entirely on the company’s marketing strategy.

What is clear is the development toward reports including not exclusively environmental issues but also ones related to workers’ health and safety programs and social responsibility actions.

All the CERs analyzed demonstrate a good visibility from the website’s home page; 24 of them are easily findable through less than 3 clicks from the home page.

Many of them present an effective site map, essential for a successful navigation around the environmental report; the visibility can be increased through hyperlinks from other organizations.

The prominent positioning of environmental information in the website home page could be seen as an expression of the importance of these issues to the company.

In all the cases analyzed, downloading time seems not to be a problem; in fact all the reports can be downloaded in less than one minute. It’s important to underline that speed is one of the key factor that affects site usability; balancing between the level of graphical display and the speed and brevity required to enhance usability is a delicate process (Shepherd K., Abkowitz M. and Cohen M.A., 2001).

Most company collect environmental data annually, so they publish a CER every year or two years; but one of the firms is keeping performance data quarterly posted.

The use of Web-based report simplifies the update process of environmental indicators, but, on the other hand, the additional costs, time and effort to update the information could be unreasonable in connection with the environmental communication strategy.

The language commonly used by all the reports is English; in many cases CERs are available in the language of the origin country and in English as well; but it is easy to find translations in more than three languages, depending on the major audience; and this could be done at minimal cost (comparing to publishing different versions of paper-based reports).

One of the advantages of Web-based CERs is the possibility of having an interaction with stakeholders on issues related to the report, the company or the reader's profile. Web could make it easier and quicker. But in the sample companies, this two-way communication tool was not used in the specific area where the environmental report was located.

Another aspect that was investigated during the analysis was the presence of a CER multi-version structure, depending on which stakeholder was surfing. Like the previous point, also this element was not taken into account designing an environmental report.

The last two aspects should be considered in developing an effective communication strategy, paying attention to the relationship with stakeholders and to their different needs.

Concerning the contents of environmental reports, it seems that there are no differences with the issues listed on a paper-based report; in the sample companies the main topics concern: air emissions, solid wastes and energy consumption. The order of importance (that is the number of firms that present in the report the specific topic) is strictly related to the operating sector, but also to the origin country: for firms working in the US worker safety statistics, social responsibility actions and compliance are of great meaning; while in Europe more importance is given to air emissions, energy and water consumption. In the table 3 for each sector, the more frequent environmental topics in CER are shown.

<i>Sectors</i>	Environmental topics
<i>Motor vehicle & parts</i>	Social responsibility Compliance Air emissions Water consumption Solid wastes
<i>Chemicals & Pharmaceuticals</i>	Worker safety statistics Air emissions Solid wastes
<i>Petroleum Refining</i>	Worker safety statistics Air emissions Energy consumption
<i>Electronic & Electrical Equipment</i>	Air emissions Waste water Energy and water consumption Solid wastes

Table 3 – More frequent environmental topics in CER

Considering the sample divided into two different groups on the basis of the origin country, all European companies have a Web-based CER; whereas only 11 of 20 US ones published an environmental report on the Web.

<i>Sectors</i>	sample	on-line CER	format	visibility*
<i>Motor vehicle & parts</i>	10	8	pdf and html	5
<i>Chemicals & Pharmaceuticals</i>	10	9	pdf and html	6
<i>Petroleum Refining</i>	10	8	pdf or both	8
<i>Electronic & Electrical Equipment</i>	9	5	pdf	5

* CERs position from home page: equal or less than 3 clicks

Table 4 – Aspects of Web-based CERs for each sector

In table 4, for each sector, three aspects are considered:

1. on-line attendance of the corporate environmental report;
2. format (pdf or html or both);
3. visibility (no. of click from the home page);

Format and visibility are not typical characteristics for one single sector. What is notable is the small number (in percentage) of firms in electronic and electrical equipment sector that publish on the Web a CER, and in all the cases it is in pdf format, meaning that it is the paper-based report displayed on the Web.

5. Future developments

According to the empirical analysis, a well-established manner to report environmental performance and issues is the use of a Web-based report beside the publishing of a paper-based one (considered the main medium); the advantages derived by using Internet are related only to improved accessibility and visibility; the use of other Web capabilities such as sound, imagery and links is developing but still limited.

Abandoning paper-based reporting altogether is a risky strategy; at this time companies taking this approach probably overvalue the capabilities of the Web in reaching audiences and communicating information in a format useful to all.

On the other hand companies are required to produce critical information at the right time and in the right format for each stakeholder to obtain benefits or “value” of the information (Wheeler D. and Elkington J., 2001), and the Web could be the best channel in terms of reduced time and cost.

Considering the above remarks, there are two scenarios for company’s environmental reporting:

- in the short term: specialized reports spread by different channels, aimed at specific target groups: electronic format for employees (interested more in topics related to regulatory compliance, training, health and safety regulations, participation and accountability); paper-based report with appropriate style and contents for academics, local communities and

environmental NGOs (interested in accountability, sustainability and transparency, verification data quality and green technologies); paper-based report with electronic updated documents about specific topics (environmental actions, program and objectives, costs, associated risks and liabilities) for financial communities, regulators and business;

- in the long term: reporting solely on the Web, designing one single well-organized document with a dynamic route, depending on which stakeholder is reading; the Web can automatically select all the reporting requirements of that audience, while the other issues can be linkable in the website. In this case a more frequent update process is possible, and the interaction between company and stakeholder can be encouraged. Reporting in this way offers reporters and readers an opportunity to present and access information in a way that benefits both.

In all the cases, it is of great importance to notice that the success of a website in reaching its target audience is increasingly dependent on good promotion.

Bibliography

ACCA working with CorporateRegister.com, 2001, *Environmental, Social and Sustainability Reporting on the World Wide Web: A Guide to Best Practice*, The Certified Accountants Educational Trust (CAET), London

Azzone G., Brophy M., Noci G., Welford R., Young W., 1997, *A stakeholders' view of environmental reporting*. On: *Long Range Planning*, pp. 699-709

Brophy M. and Starkey R., 1996 Chapter 10, *Environmental Reporting*. In: Welford R. (Ed) *Corporate environmental management - systems and strategies*, pp. 150-176. Earthscan Publications Ltd, London

Global Reporting Initiative (GRI), 2002, *Sustainability Reporting Guidelines*

Isenmann R. and Christian Lenz, 2002, *Internet use for Corporate Environmental Reporting: current challenges – technical benefits – practical guidance*. On: *Business Strategy and the Environment*, pp.181-202

Noci G., 2000, *Environmental Reporting in Italy: current practice and future developments*. On: *Business Strategy and the Environment*, pp.211-223

Scott P. and Jackson R., 2002, *Environmental, Social and Sustainability Reporting on the Web: Best Practice*. On: *Corporate Environmental Strategy*, pp.193-202

Shepherd K., Abkowitz M. and Cohen M.A., 2001, *Online Corporate Environmental Reporting: improvements and innovation to enhance stakeholder value*. On: *Corporate Environmental Strategy*, pp. 307-315

Skillius Å. and Wennberg U., 1998, *Continuity, Credibility and Comparability - Key challenges for corporate environmental performance measurement and communication* (a report commissioned by the European Environment Agency)

Wheeler D. and Elkington J., 2001, *The End of the Corporate Environmental Report? Or The Advent of Cybernetic Sustainability Reporting and Communication*. On: *Business Strategy and the Environment*, pp.1-14

Annex 1: SAMPLE

Motor Vehicle & Parts

U.S.

1. General Motors
2. Ford Motor
3. Delphi
4. Johnson Controls
5. Visteon

Europe

1. Daimler Chrysler (Germany)
2. Volkswagen (Germany)
3. Fiat (Italy)
4. Peugeot (France)
5. BMW (Germany)

Chemicals & Pharmaceuticals

U.S.

1. Merck
2. Johnson & Johnson
3. Pfizer
4. Dow Chemical
5. DuPont de Nemours

Europe

1. GlaxoSmithKline (Britain)
2. BASF (Germany)
3. Bayer (Germany)
4. Aventis (France)
5. Novartis (Switzerland)

Petroleum Refining

U.S.

1. Exxon Mobil
2. Chevron Texaco
3. Marathon Oil
4. Conoco
5. Phillips Petroleum

Europe

1. BP (Britain)
2. Royal Dutch/Shell Group (Britain/Netherlands)
3. Total Fina Elf (France)
4. ENI (Italy)
5. Repsol YPF (Spain)

Electronics & Electrical Equipment

U.S.

1. Tyco International
2. Emerson Electric
3. Whirlpool
4. Eaton
5. Maytag

Europe

1. Siemens (Germany)
2. Royal Philips Electronics (Netherlands)
3. ABB (Switzerland)
4. Electrolux (Sweden)