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From economic balance sheet to ethical and environmental reporting in the evolution of the modern corporation

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Abstract

The enterprise is a social phenomenon which is unstable, dynamic and rarely attributed to a coordinated and unitary system. Recurrent financial scandals involving shareholders, partners and investors, prove that positive or negative valuations cannot be based on company profitability as the only parameter. It is now widely believed that companies should communicate their activities to make their work visible and shareable. Communication reveals the basic values of a company, its competencies, its aims and the results achieved, representing a means to build trustworthy and cooperative relationships with stakeholders. The evolution of a business from its assets and liabilities statement to its ethical-environmental account indicates, on the one hand, the complex of values, which are not exclusively of economic nature, to which the company conforms its conduct, on the other hand, the guidelines which mark the relationships with the various people involved. The denomination of an ethical-environmental balance-sheet points out the essence of a business through its economic, social and political-institutional dimension. For the ethical-environmental balance-sheet to be reliable and to prevent it from becoming an self-referential and image document, it is opportune to refer to relationships between the company and the collectivity in general, considering the management of a company during a specific reference period of administration. Furthermore, it is necessary to bear in mind that an ethical-environmental balance-sheet, despite being a final balance document, must also sketch the developmental lines of future relationships between businesses and environment.

My work is intended to illustrate the peculiarities of an ethical-environmental balance-sheet, describing the reference values to which companies conform their conduct, as well as their aims and guidelines which integrate the traditional relation on management.

Key-words: business, balance-sheet, ethics, environment, accounting.

1 – Introduction

The present context that we live in is characterized by significant social, organizational, behavioural and technological changes. It concerns a difficult and complex relation of forces in which

the objectives of company growth and development have to be adapted to the protection of the environment at national and international level.

Human values are becoming increasingly relevant, and the ethical factor emphasises the need to develop management models which company policies can be based on, in function of their relation with the community.

In such a context, ethics appears as a multiform concept, abstract and discordant at the same time, therefore complex, in the sense that often we appeal to it regardless of concrete references, as its definition is not univocal and may reveal a variety of approaches in function of who uses it.

Within the specific economic-business sector, the term ethics refers to: 1) the value system of a business; 2) the work done on this system for the purposes of an accurate definition of it; 3) the influence on choices and the evaluation of alternatives aimed at giving effect to this complex of values in the economic unit; 4) the management principles and the behavioural norms which regulate the operational acts of the business organization, expressing its ethical culture and allowing it to pursue the realization of the chosen value system; 5) the global control on the actions carried out by the company.

Therefore, it entails adopting as a rule a value system that represents the reference point for company decisions and conducts and that, through opportune schemes of effect on management, offers guidance criteria for the behaviour of company bodies¹.

2 – Relation between ethics and environment

Therefore, ethics represents an instrument and a process that directs management, by means of a problem-solving approach, towards the world of productive organizations, aiming at evaluating, in extreme synthesis, the compatibility between conducts and creation of a value system (fig. 1).

The change has been radical and, among the themes relevant for the purposes of the issue that we are dealing with, we find the themes of transparency, quality and cooperation².

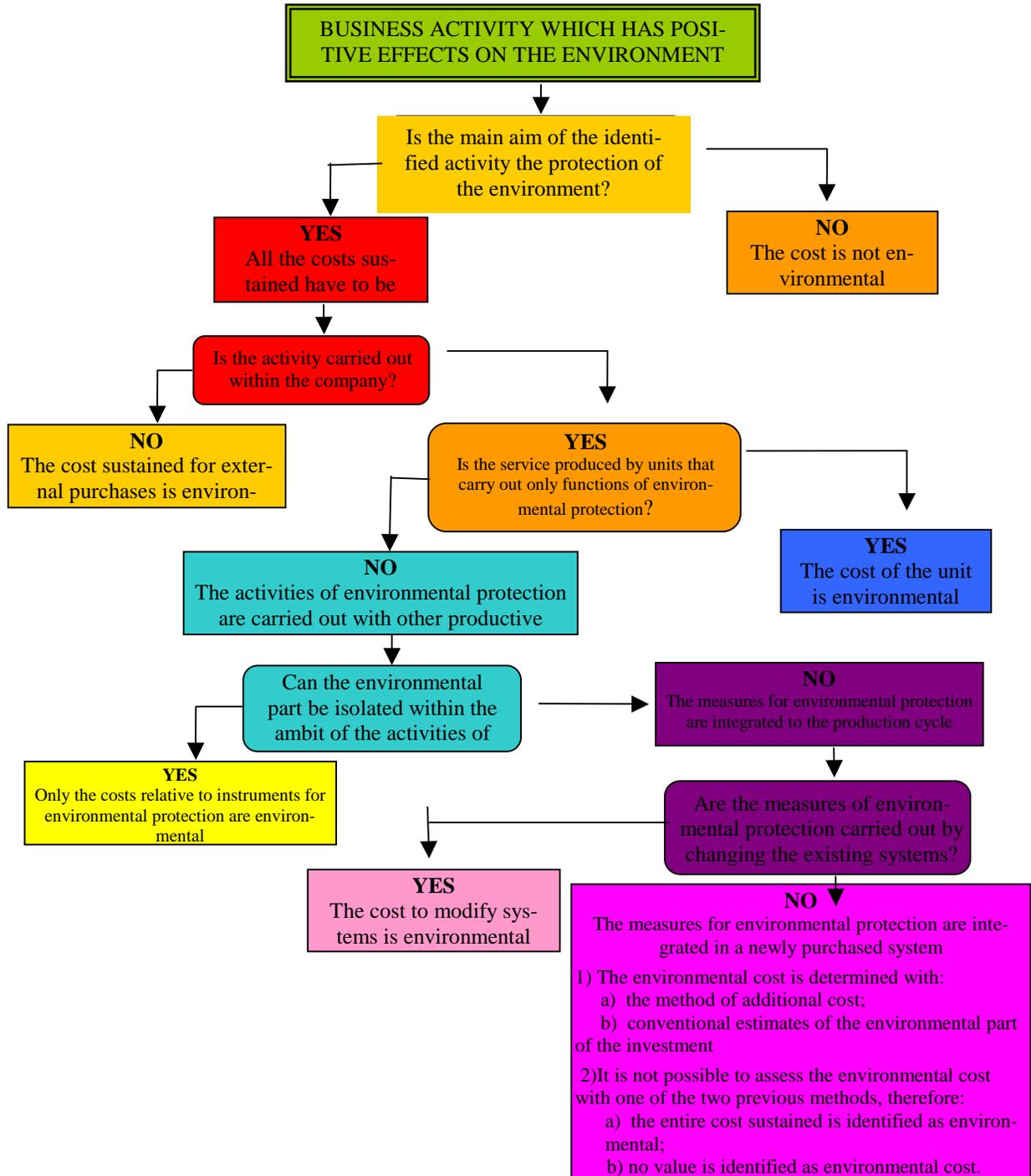
By doing this, we have tried to:

- Replace the old rules of exchange and competition with a different logic of systematic collaboration between interested parties, putting in the place of the limited ethical contents of contractual relations, the ethical potential of dialogue and exchange of knowledge;
- Modify the traditional rules of hierarchy, by means of a different logic based on participation, with the intent to increase efficiency and the content of ethicality in work relations, towards the development of creative competence and the realization of the individual, who takes on wider autonomies and responsibilities.

¹ Felici G. (2004), *Premesse ed evoluzione del Bilancio etico – sociale*, F. Angeli, Milan

² Bartolomeo M., Malaman R., Pavan M. and Sammarco G. (1995), *Il bilancio ambientale di impresa*, Il Sole 24 Ore Pirola, Milan

Fig. 1 – Identification process for costs concerning environmental activities



Source: adapted from Bartolomeo M., Malaman R., Pavan M., Sammarco G., (1995), *Il bilancio ambientale di impresa*, Il Sole 24 Ore Pirola, Milan

Therefore, we can establish that the socio-economic context steers productive units towards competition with conducts that incorporate increasing levels of ethicality, and requires the under-

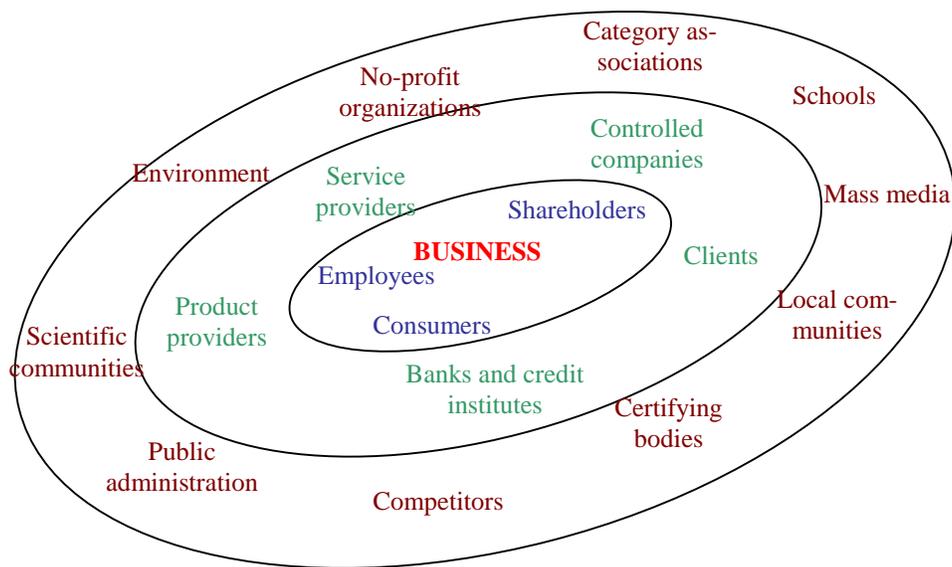
taking of responsibilities that become more complex, as they are not simply addressed to certain categories of subjects, but involve also shareholders, holders of any kind of interest and the whole company (fig. 2).

Furthermore, globalization contributes to making increasingly burdensome any type of situation of inefficiency and insolvency, of quality deficiency and of unbalance that may emerge in each productive organization that has the dignity of business.

Indeed, the effects do not only rebound on the survival of the single organization, but they extend onto the outside, in terms of rupture of the network balance which the company belongs to, contributing to an exponential increase of the complex responsibilities of each system unit (tab. 1).

The decision to resort to the ethical-environmental account usually represents a stage of a wider process of strategic re-orientation towards environmentally friendly management models, based on the adoption of management systems and of environmental audits (EMAS) and/or of standards of environmental quality (Iso 14000).

Fig. 2 – Map of business stakeholders



Of course, the most interesting aspect of this approach is the integration between quantitative-physical data and economic-monetary data, as in fact the environmental reports that are currently published in many cases do not highlight the existing relations between these two series of data, justifying such gap with the difficulty of calculating environmental costs³.

³ Cisi M. (2003), *Il bilancio ambientale*, Giappichelli, Turin

Tab. 1 – Development model for the ethical-environmental balance-sheet

Stakeholder	Areas for improvement
Provider	-aiming at an extension of the certification of methods of qualitative management of the production line -identifying new indicators, which can monitor processes of continual improvement -creating a partnership, through better communication with providers, for an assessment of the indirect impacts on the environment
Client	-further improvement of outlet facilities and efficiency of the logistic service - more transparency in the definition of contracts - developing partnerships for consumer information and education
Consumer	-reinforcing communication on the territoriality of raw materials -contributing to containing inflation -increasing efficiency in the management of complaints -using packaging to divulgate an environmental, social and nutritional culture -introducing in the collection, objectives of socio-environmental nature
Financial community	-introducing in companies figures who operate on risk management -potentiating the communication of performances by creating a website
Environment	-starting up a process of environmental certification of products -increasing communication on the environmental impact of products -encouraging the final consumer to recycle packaging -intensifying the effort to reduce packaging material
Society	-codifying modalities of relations with no-profit organizations, making the access to partnership with the company fairer and more transparent -identifying indexes of measurement for the social effects determined by the initiatives promoted

As in the annual financial statement eventual losses have to be registered, and consequently the costs which have determined them, similarly in the ethical-environmental account, the relations held with various actors must be pointed out, in the case that they are relevant for purposes of business management.

Tab. 2 – The intervening relation between environment and business

Environmental factors	Business factors
-autonomy of the consumer	-internalization
-fulfilment of primary material needs and culture sensitive to the well-being of society in the long term	-awareness, on the part of companies, of their impact on the context of reference
-research for higher values	- impact of technological development on the quality of work and of the natural environment
-greater competition	-towards the stakeholder approach
- development of opinion movements	-recognition of the right of citizenship of businesses
-discussion on the social legitimization of multinationals	-centrality of relations in the government of companies and the role of reliance

Furthermore, within the account, a strategic role is represented by the aspect that illustrates the relations between the business and the community in general, therefore, the various activities intended to implement the quality of life, such as interventions for culture, research, etc., values

which are the foundations of every internal and external activity, and prove that a company does not resort to ambiguous actions and opportunistic conducts, but is interested in assessing the impact that an activity has on the natural environment⁴ and evaluating its efficiency in the use of resources (tab. 2).

On the other hand, it is now common practice, and not only a perceived need, to draft a document intended to illustrate the activities of a company that, on the basis of founding values, make it possible to create a value system in a climate of social coexistence and in the respect of the natural environment (tab. 3).

Tab. 3 – Creation process of value within the company

1st level Picture of strategic options	What the company wants to be vision, mission, values	What the company wants to be like Social mission, policies for stakeholders
2nd level Executive policies and instruments	Interventions on procedures Certification of quality Certification of the production line Environmental certification Ethical certification	Interventions on processes Organizational model Adoption of an ethical code Adoption of best practices
3rd level Elaboration of indicators	Indicators of the generated value Annual economic-financial statement	Indicators of the quality of the generated value Ethical-environmental balance-sheet

In such context, it is important to expand on the transversal centrality of business balances which is reflected also on the drafting of the traditional balance-sheet, as the awareness of all the single ethical problems correlated to the business activity would result as an end to itself if there were not an idea of moral responsibility in the report of the annual financial statement. Thus, the account would allow to verify the coherence of the conducts adapted to the decisions made.

3 – Economy, sociality and corporate ethics

Often in the past relationship between economics and morals was set aside or reduced to mere moralistic exhortations with no relation to the economic world, dominated by the imperative well expressed by the maxim “business is business”. The prevailing opinion considered the market able to ascertain, based on the degree of success recognized to a corporation, whether the corporation itself carried on an activity able to satisfy community's needs by providing more innovative services and products.

The achievement and the maintenance of an economic balance demonstrated that the corporation carried on in a proper way its activities in the social field too.

⁴ Terzani S. (2002), *Il sistema dei bilanci*, F. Angeli, Milan

In the last years, a debate flourished over these issues, supporting the idea of the indissolubleness of economic choices and ethics issues. The increase of the economic gap in a society where inequalities among citizens tend to increase instead of decreasing, the bigger freedom of action of the corporations linked to the widespread establishment of liberalistic trends and of private enterprise are food for thought on corporate ethics⁵.

A precise relationship exists between economy, meant as the condition necessary to economic balance, and sociality. Economy, that is to say “the ability of management to maintain an economic balance”⁶, is a necessary condition for the corporation to last in the time. On the other hand, one of the requirements to maintain balance is to meet sociality, i.e. the ability to address effectively stakeholders’ needs.

The social function of the corporation then can be seen as the precondition for the existence of corporation in itself, and at the same time as the characteristic ensuring its survival. Considering that the legitimation to its existence comes from its suitability to satisfy human needs through the production of goods and services and that the legitimation to its preexistence as a vital structure is linked to the economic aspect of the services provided by it, it is correct to link the future of any kind of corporation to the combination of economy and sociality⁷.

From what was written above, one can understand how the corporation while carrying out its economic activity, has also social goals, whose achievement contributes to the growth of the system. This of course doesn’t mean that society goals correspond to corporation goals, but assumes a continuous interaction of both parties’ interests.

Actually, socially responsible behaviors distinguish the identity of the corporation itself, defining the context of interactions among individuals and power relationship. Their importance also increases all the more as consensus building shifts progressively from systems based on control by penalty to those system more participatory and less hierarchical, based on mutual involvement and accountability.

Management enlarged to the community, in fact, can be seen mainly in all those kinds of non-coercive incentives aiming to build consensus around corporation interests among the various stakeholders, to the extent of the vital need to maintain profit levels.

In the last years, scholars analyzing the “corporation” phenomenon in all its aspects, linked up economy and sociality ideas to that of ethics, with the related taxonomies: economy ethics,

⁵ “As corporate management is a voluntary activity of the social man, taking place mainly in the field of economic goods and addressing human goals, it contains aspects of economy, sociality and effectiveness in all its attitudes and in all its actions”, Onida P. (1961), *Economicità, socialità ed efficienza nell’amministrazione dell’impresa*, *Rivista Italiana di Ragioneria*, n. 3-4, Rome

⁶ Caramiello C. (1993), *L’azienda. Alcuni brevi riflessioni introduttive*, Giuffrè, Milan

⁷ In a broad sense, in the corporation there is a community of interests that actually broadens to all those related to it and in a way or in an other, inside or outside are affected by its presence, and have expectations towards its activities. Corticelli R. (1995), *L’azienda: economia e socialità*, *Rivista Italiana di Ragioneria ed Economia Aziendale*, n. 1-2, Rome

business ethics and corporate ethics.

In particular, economy ethics pertains to the application of ethical principles to the economy in general and to economic policy; while business ethics pertains to all ethical duties of those who operate in the business world, that is to say it considers the economic operations of those who act in the market. Finally, corporate ethics pertains to those special corporations which taking their risks on the market try to achieve a balance allowing them to reward in a satisfactory way all those acting in the system and in particular the bearers of venture capital⁸.

But how to define ethic behavior? And how it can be able to improve the degree of sociality of the corporation? It is clear that in the corporation, the concept of ethics is quite complex, due to the intertwinement of various interests and liabilities, and to the variety of aspects under which ethics can be considered.

In regard to this, let's consider individual ethics, i.e. ethics from the point of view of the behavior of all those who operate in the corporation and take part in the achievement of corporate goals.

The first ethic aspect concerns the behavior towards the corporation in itself. Behavior must be respectful of the social contract, according to which the individual in return to certain advantages, is bound to ensure a fair performance. Doing this, individual complies with the goals of fairness and effectiveness while performing his role in the organization.

The second aspect of ethics pertains to the behavior of each individual towards those with whom he comes into contact with inside the organization. Ethic behavior, in this case, is characterized by the respect of other people personalities and rights in all corporation activities (decision, management, control, assistance related activities and so on).

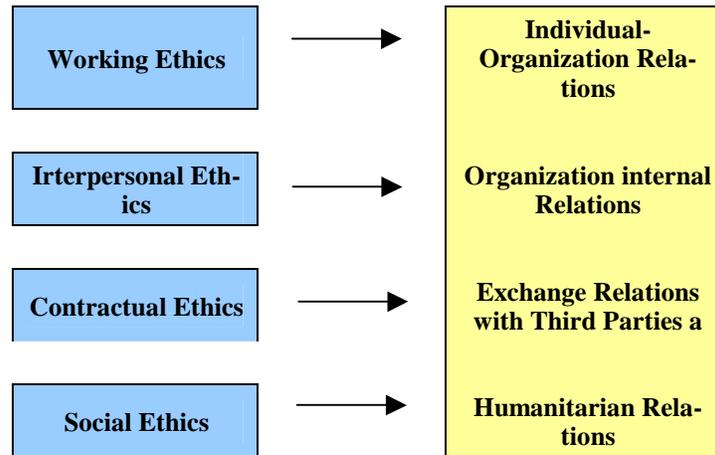
The third aspect is the relationship with third parties (such as clients, suppliers, financial backer etc.), as representative of the corporation. This is almost always the most delicate aspect, as it involves the respect of interests (of the corporation and of the third parties) which may appear or be conflicting. Ethic behavior should be inspired, in this case, by the application of principle of transparency, fairness and openness in contractual relationships, taking into account that one of the main results of negotiation is the establishment of an atmosphere of trust, essential to long term interests of the corporation.

The fourth aspect of corporation ethics is the sensitiveness towards community's needs, in other words the expectations of society members regarding environmental protection, promotion of the quality of life, help to the poor and so on. In this case ethic behavior consists in assigning to social purpose financial and human resources that can be taken away from the corporation without jeopardizing corporation balance and survival over the long term.

⁸ Rusconi G. (1996), L'etica dell'impresa nell'ambito degli studi economico-aziendali, *Rivista Italiana di Economia Aziendale*, n. 9-10, Rome

According to what we saw, we may conventionally consider corporation ethics as “secondary ethics”⁹ built on individual behaviors belonging to working ethics, interpersonal, contractual and social relationships (fig.3).

Fig.3 – Corporation Ethics Scheme



The definition of ethic behavior is easier to understand if one considers it from the point of view of the corporation seen as the center of the interests of various primary stakeholders (linked by contractual relationships) and secondary stakeholders (linked by influence relationships). “In this wider social vision, ethic behavior can be defined as the behavior that distributes incentives and costs among all stakeholders according to fairness, equity and justice principles”.

Business ethics, then, pertains to the application of ethic principles in complex organizations. Such principles can be broken down in: 1) the characterization and graduation of ethic values to be placed at the basis of corporation's life; 2) the transmission of these values inside the organizational structure; 3) their proper adoption in the various choice problems”¹⁰.

Even though to speak about corporation ethics may sound as an attempt to combine two contrasting issues, it is necessary to be aware that many decisions faced by the operators¹¹, have ethical implications.

Such comment makes one think about the relationship between corporate ethics and social responsibility. Even though in the literature business, ethics and corporate social responsibility are

⁹ “Corporate ethics is a “secondary ethics”, as it results from the integration of the ethics proper to the individuals working in the corporation with moral values placed at the basis of the organization. In fact, the corporation cannot have an autonomous ethics of its own detached from the social body (all the individuals) forming its organizational structure.” Sciarelli S. (1999), Responsabilità sociale ed etica d’impresa: una relazione finalizzata allo sviluppo aziendale, *Finanza Marketing e Produzione*, n. 1

¹⁰ Sciarelli S. (1996), Etica aziendale e finalità imprenditoriali, *Economia & Management*, n. 6, Milan

¹¹ “There are a lot of moral problems related to corporation development. From ecology to transparency of financial statement, to relationships with staffs, to many other management problems that can affect conditions under

often used as interchangeable terms, as a matter of fact these are two concepts with totally different contents, even though strictly related.

In fact, social responsibility compared with business ethics, tends to focus more on corporation behaviors as a whole, rather than on the behaviors of the members of the organization taken as individuals¹².

Reference standards too, differ. Whilst business ethics demands that an individual or an economic system behave consistently with the rules of moral philosophy (whose content depends on the tendency of thought one refers to), social responsibility has as indispensable reference standard the harmony between corporate behaviors and the “expectations and needs of the external environment”¹³.

Anyway, the complementarity relationship between the two is clear. In fact when the corporation and its managers define responsibilities and liabilities towards stakeholders, evaluating the legitimacy of their claims, they enter in the field of ethical values.

North American scholars differentiates further corporate social responsibility (CSR), resulting from the role that each corporation is called to perform in the society and that refers to the social impact of corporate behavior, and corporate social responsiveness, which can be interpreted as social sensitiveness or attitude to notice stimuli coming from the society. This distinction, now common, tends to separate the static concept of social responsibility (acceptance of duties coming from the activity performed by the corporation) from the dynamic concept of social responsibility, which characterizes the responsibility of the corporation to make itself responsible of social problems, answering to pressures that could come out in the reference frame. Indeed, the principles placed at the basis of the corporate social responsibility are basically two: the charity principle, according to which the corporation is bound to take part financially to the solving of the problems of the community, to which it belongs to; the stewardship principle, according to which the corporation, managing as trustee all the resources of all stakeholders, is bound to act for the common good. From this point of view, both the importance given to the social function of the corporation, than that given to causes which brought to the enlargement of its contents can be understood. Two changes hugely affected this aspect: the improvement of the standard of living of the population, which raised the quality of the needs to meet and the demand for services; and the increased attention towards pollution problems, in particular those related to production activities.

After what we said, it is no surprise the fact that different conceptualizations require the sharing of some general principles.

which economic, financial and asset balances are achieved.”, Rusconi (1996)

¹² See Sciarelli (1999), and Rusconi (1996)

¹³ Di Toro P. (1993), *L'etica nella gestione d'impresa*, Cedam, Padua

The first principle concern the necessity to integrate the economic dimension with the social and the environmental one in order that all corporation activities contribute to increase the common wealth, bringing quantitative and qualitative improvements.

A second principle concerns fairness, referable first of all to the necessity to ensure a fair access to resources to the present generations, avoiding that some parts of the population live in extreme poverty¹⁴ (intragenerational fairness), and then to the necessity to ensure to future generations the possibility to satisfy their material needs (intragenerational fairness)¹⁵. It follows that as we do with resources, harmony, democracy, safety and freedom too represent values to be protected and preserved.

A third principle introduces the concept of corporate citizenship, where corporation is regarded as any other individual. Therefore corporate actions are evaluated as coming from a member of the community and, only afterwards as the result of a production unit. This strengthens the local ties of the economic organization and induces it to respect shared social rules and habits.

A fourth principle concerns sustainability. This can be defined as all the relationships existing between human activities and their dynamics. Dynamics must be such as to allow life to continue, individuals to satisfy their needs and cultures to develop in a way not to change global biophysical context. It is based on these reflections that the corporation, as system strictly connected with the territory in which it operates, interiorizes ethics as one of its competitiveness factors, renewing the way in which it produces value and rearranging its priorities. To do so, it is necessary to modify corporate culture taking burdens than often competitiveness doesn't allow to sustain.

A considerable progress takes place, then, when ethics is considered as an opportunity rather than as constraint to corporate governance. From this point of view, one moves from the concept of the respect of ethic values to reach economic-corporate goal to the concept of the adoption of ethics as stimulus to corporation development in the mid-long term.

4 – Environmental strategy: an opportunity for businesses

The adoption of an increasing number of legislative norms regarding environmental management and the growing market trend to favour the products of companies that are more sensitive to envi-

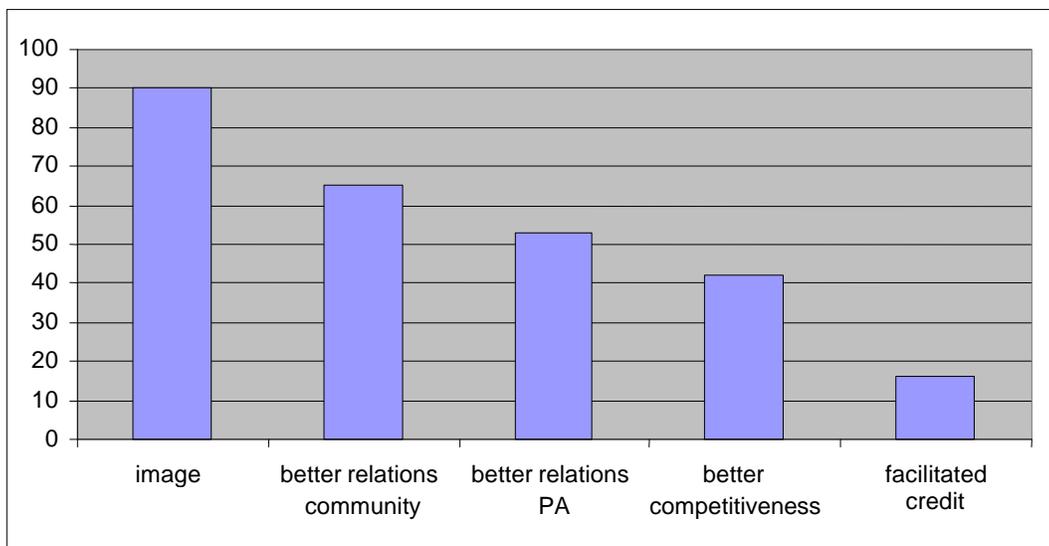
¹⁴ According to the last “United Nations Development Programme ” (Unpd), 18% of world’s population, about 800 million people, own 83% of world’s income, while 82% of world’s population, around 5 billion people, share the remaining 17%. Regarding the usage and waste of earth’s resources, richer countries consume 70% of world’s energy, 70% of world’s metals and 85% of world’s wood. As for United States, 1% of the population own 40% of the wealth, another 20% own 40% of it, and 79% of the population the remaining 20%. According to forecasts, based on the actual trend seeing the poorest fifth losing 17% of the owned income while the richest fifth increased its income of 18%, in 2010 in half of the US territory we will have a situation of “ecosystem at risk ” with one boy out of four suffering hunger.

ronmental problems are the reasons why more and more companies are perceiving the necessity to adapt opportunely their production cycles. The introduction, or rather, the development of systems of environmental management must be considered, on the contrary, not exclusively a restraint to the operativeness of a company, but an element of primary importance, which contributes to giving the company a winning image against its competitors¹⁶.

In synthesis, the opportunities that can derive from the development of a system of environmental management are: reducing the impact of the company's operativeness on the environment; strengthening its image on the market, differentiating it from its competitors; reconsidering critically its own operational processes; increasing productivity and reducing wastes and a number of operational costs; reducing environmental risks and relative costs; building a fixed basis in order to improve continually environmental performances. Being able to seize these opportunities means not only improving environmental performances and business profitability, but also contributing to the creation of a value system¹⁷.

Figure 4 illustrates the most widespread motivations that have induced some national companies to implement a system of environmental management. The improvement of the company image is the most relevant datum followed, although with a strong difference, by better relations with the community¹⁸.

Fig. 4 – Motivation of the environmental certification



¹⁵ Lanza A. (1997), *Lo sviluppo sostenibile*, Il Mulino, Bologna

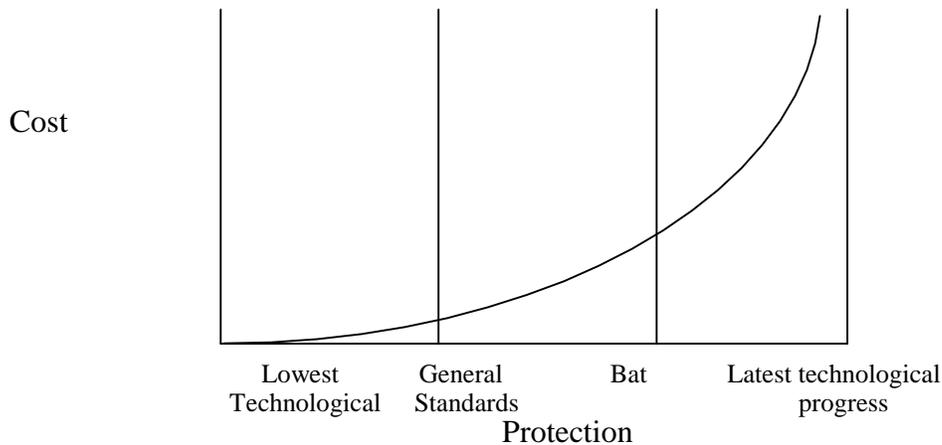
¹⁶ Paris A. (2003), *Il ruolo del rendiconto etico – ambientale nel sistema della comunicazione aziendale*, Cedam, Padua

¹⁷ Troina G. (2001), *L'impresa e la gestione ambientale, dinamiche operative e soluzioni*, Il Sole 24 Ore, Milan

¹⁸ Troina G., (2001). These data have been taken from the study by Ipa Servizi, *La Gestione dell'ambiente, il contesto, i protagonisti, i vantaggi, una ricerca sul capo*, which can be found on the website <http://www.ipa.it>.

The assessment of investments depends on how aware a company is of environmental issues and on the consequent level of environmental protection which it intends to achieve in relation to its cost¹⁹. Theoretically, such relation can be schematized in figure 5, where an infinite cost is associated to the total absence of protection. Between these two extremes, which are purely theoretical, we find the different combinations of cost and level of environmental protection, corresponding to the different company choices. From the figure it appears that, beyond the level of protection allowed by the best technology available (Bat), the cost curve has a growing tendency becoming almost vertical since more contained improvements within the level of environmental protection imply increasingly higher costs.

Fig. 5 – Relation between cost and level of environmental protection



5 – Environmental accounting

Environmental accounting is the complex of records concerning the use of natural resources that come under the company's sphere of influence, providing information on the environmental variable in the company and allowing the use of the same information in decision-making processes and in external communications. The discipline we are dealing with can be divided in two large areas: environmental accounting towards the outside and environmental accounting towards the inside (for management purposes)²⁰.

The types of accounting, characteristic of the eco-balance-sheet, have different structures and contents. *General accounting* defines the criteria to evaluate adequately environmental costs and

¹⁹ Marangoni A. (1994), *La gestione ambientale*, Egea, Milan

²⁰ Simonazzi R. (2005), *Il bilancio e la contabilità ambientale*, Halley ed., Rome

investments, following the logics of annual financial statements. On the other hand, *analytic accounting*, by identifying the environmental costs of single business units²¹, offers specific information about environmental accounting, which is distinct for the various reference units. However, general and analytic accounting are limited to identifying environmental costs and investments, but cannot provide adequate elements which enable to act on the environmental variable in the company. Therefore, what emerges is the need for a different vision of the environmental phenomenon, where the methodology that here we call eco-accounting has great relevance.

With *eco-accounting* we refer to all those specific measurements of environmental impacts and their causes. Therefore, eco-accounting offers valid instruments to understand business processes in their environmental dimension, from which it is possible to study adequate solutions of intervention to reduce eventual negative phenomena. Eco-accounting also offers two procedures of identification and assessment of the environmental impact that have a different approach compared to the one used until now and typical in traditional accounting methods:

- Low cost accounting;
- Eco-factor.

To characterize these two approaches, we can say that in the first case we have a surveying method (of German matrix) which tends to examine analytically the flows to identify the environmental impacts of processes and activities (of production and not only). In the second case, we have a quantifying method (improved in Switzerland), intended to verify firstly the existence of an impact and then indicate its entity and significance in comparable terms, which are based on the specificity of the factors characterizing the environmental impact²².

5.1 – Flow Cost Accounting

Flow Cost Accounting was developed at the Institute of Management and Environment IMU²³ under the direction of professor B. Wagner at the University of Augsburg in Germany. This type of eco-accounting is also identified as material flow cost accounting²⁴. It is a new method that, by determining exactly material flow²⁵, calculates precisely, for each process, waste costs, as well as product costs. Thus, it aims at reducing both environmental impacts, on the one hand, and costs, on the other hand. Rather than measuring the materials that make up the finished product (of good quality), it measures material loss, which is not found in the finished product. Therefore,

²¹ Sites, divisions, business units, single environmental project, process, department, etc.

²² Ranghieri F. and Sammarco G. (1997), *Ecobilanci in aumento e sempre più esaurienti*, *Il Sole 24 Ore*, Milan, November

²³ Institute für management und Umwelt

²⁴ The expression «material flow» refers to the flow that, generated by raw materials, energy, etc. (material), allows to obtain from the latter goods in process and finished products by means of processing and transforming activities, which generate both discard and waste.

²⁵ The term “material” is used in a generic sense, without distinction between raw material and secondary material.

this method entails recording names and volumes of materials introduced at the single points where losses occur, in order to carry out an assessment. Identifying these losses as “material loss”, this method seeks to reduce loss, in order to reduce both environmental impact and costs involved.

Currently, this method is meeting great interest and has become a reference tool in accounting projects for environmental management of the United Nations Division for Sustainable Development²⁶. Flow cost accounting focuses on material and is different from other methods because, by calculating costs from a different perspective with respect to the past, it allows to determine exactly waste costs. According to the traditional calculation of costs, these costs include waste treatment costs and recycling costs.

Flow cost accounting aims at identifying with precision waste production costs. Substantially, waste is what companies originally buy as raw material for a certain equivalent buying value. Following the material flow, it is clear how raw materials are processed and, during the process, a part of them becomes waste, becoming separated from the main course of material flow. In fact, even processes that produce waste imply various manufacturing costs. Flow cost accounting determines these waste production costs and defines which part of these costs has been sustained to produce waste, which is not only a source of expenditure, but also has a significant environmental impact. Calculation methods are thus uniformed and activities for the development and implementation of interventions to reduce environmental impacts become more efficient.

This way, the management perspective goes beyond business boundaries. Despite widening visibility to the whole group, to the entire network or rather to the entire supply chain, it is possible to maintain transparency with regard to the sources of loss – intended both in terms of value (economic management) and in quantitative terms (ecologic management). On the other hand, with regard to the actual structure of flow material accounting, it is recommended to consult the documentation elaborated by the German research institute IMU, which can be considered the original source of flow cost accounting.

IMU flow cost accounting divides business costs according to the following categories:

1. *Material costs*: costs of raw material and of every kind of resource bought from the outside;
2. *System costs*: depreciation costs and manpower costs, which are determined within the company;
3. *Annexed costs*: costs relative to transporting material, concerning fuel, electric power and physical distribution in general;
4. *Waste treatment costs*: external costs, for waste disposal.

Therefore, in consideration of what has been said, we can say that the characteristic of flow cost accounting consists in determining costs throughout material flow.

²⁶ UNDSO: United Nations Division for Sustainable Development.

5.2 – Eco-Factor

Eco-factors refer to measuring criteria for ecologic deficiency of every type of environmental impact²⁷. The calculation of eco-factors has been put into practice in Switzerland on the basis of the studies by Muller-Wenk²⁸ and a group of researchers at the University of St. Gallen within the projects directed by Buwal²⁹. In 1990 the Swiss body – which also has the function of observatory and study centre – had already synthesized eco-factors in a methodology presentation denominated Eco Scarcity, and nine years later updated it in a new publication. This new version of the method, put into practice for the assessment of environmental impacts along the lifecycle (LCIA), also presents updated data on the substances to assess. Indeed, in the meanwhile, there has also been a huge increase in the number of such substances and we know more about their effects on the environment. This has opened up the possibility to apply this approach to the whole company, to the territory or the country, going beyond the simple products and/or production processes. Practically, it is an evaluation based on flow data relative to various substances. Therefore, what follows is a consideration of the distance to target, that is the distance between the current situation – according to impact measurements carried out – and the desirable and achievable environmental state. The “weight” of each substance assessed is obtained by elaborating the relation between real flows and objective flows. The numerical value obtained is the expression of that “weight” in EIP³⁰.

Such factors represent a useful reference from a chemical point of view as far as the critical dimension is concerned (Fk); they are considered also in function of an objective of eventual use restriction and/or administrative sanction. In this case, we can say that Switzerland has been able to supply itself with coefficients that represent the consultation basis for the realization of national objectives, rather than coefficients of scientific-natural conversion. Besides Switzerland, other countries have similarly supplied themselves with environmental coefficients. Among these Holland, which has elaborated some coefficients of environmental impact with the name of Eco Indicator⁹⁵, while Japan has adopted the Jepix³¹. The European Union is elaborating specific regulations for them to be adopted and used in other member countries³².

²⁷ Indeed an eco-factor is «the function expressed by the relation between the total effective dimension (F) of any significant violation that occurs in an empty space and the critical dimension (Fk) of the same violation of the environment, such as to involve a change in the environment, which is thus compromised, and a change in its state from acceptable to not acceptable.

²⁸ Abbe S., Braunschweig A. and Muller-Wenk R. (1990), *Methodik fuer Oekobilanzen auf der Basis Oekologischer Optimierung Schriftenreihe Umwelt n.133*; Muller-Wenk R. (1994), *Oekologische Buchhaltung*, in Simionis U.E. *Oekonomie und Oekologie – Auswege aus einem Konflikt*, Kahlruhe.

²⁹ The Helvetic Federal Agency for environment protection.

³⁰ EIP: Environmental Impact Point.

³¹ Jepix: Japan Environmental Policy Priority Index.

³² Some companies have adopted these same principles and made original eco-indicators, adequate to calculate and express environmental impacts related to their company activities.

6 – The environmental balance-sheet

The business environmental balance-sheet is the accounting instrument which synthesizes in a single document data regarding the environment, gathered in a detailed and structured way by the business information system during the course of a year. Its function consists in representing in quantitative and qualitative terms the type and entity of the impact exerted by the business productive activity on the natural environment, in the form of consumption and impoverishment of natural resources as well as of emission of polluting substances.

The environmental balance-sheet is a management instrument for internal use but can also have external relevance: indeed, if on the one hand it provides the business managing functions with general information for the management and the control of interactions between the company and the environment³³, on the other hand it represents the initial informative document for the predisposition of instruments for external communication and the environmental report.

The need to prepare information instruments such as the environmental balance-sheet or the environmental report has emerged since the early Seventies, within the debate, triggered between the main companies of the USA, about the opportunity to integrate the annual social statement with further evidence which provided the required information to the various subjects which companies usually had relations with. Indeed, besides the traditional economic actors such as shareholders, credit institutes and in general all the stakeholders, increasingly often companies had to interact with other types of subjects, characterized by interests concerning mainly the social sphere, more than the economic one, such as their own employees and the trade-union organizations that represented them, the consumers and the relative associations, the population living in the immediate neighbourhood of the productive settlements, the health and safety authorities, the environmentalist movements, etc.

The need for information and reassurance on the part of the public opinion regarding the salubrity of processed substances, the safety of production systems and fair management in industrial processes, became impelling between the Seventies and the Eighties, mainly after a series of accidents occurred in production systems with heavy consequences on the people and surrounding areas.

For this reason, the environmental balance-sheet is often used to draw up the quantitative summary of the environmental report, which is the instrument used by the company to provide external interlocutors with an overview of its situation in terms of impact exerted on the environment by its activities and of preventive and containing measures adopted to keep them under

³³ Representing a useful reference also for the purposes of an analysis of the life cycle of a product, or for the formulation of a system of environmental management

control³⁴. The companies that use these two instruments attach them increasingly often to accounting-financial documents distributed during meetings of shareholders. For the articulation of the environmental balance-sheet, a standard reference model has yet to be created. Each company is free to structure it how it considers best. According to the grade of strategic importance that the environment variable has in business management, there are extremely simplified versions, separated from the rest of the system of analytic accountancy, which are limited to the simple collection of environmental statistics on various polluting emissions (with the only purpose of monitoring the respect of law limits), or more articulated and complex forms, which consist in actual mass balance-sheets, where all the material entering the production process finds its own physical destination in the form of components of the final product or in the form of polluting reject/residual (waste, sludge, gas emissions), etc.³⁵. For management purposes, a well-structured environmental business balance-sheet should allow to:

- verify periodically the environmental impact of the company;
- record the presence of critical areas;
- plan and organize mitigation actions for the criticalities observed;
- highlight more clearly the company's environmental costs, making them more available in the internal decision-making processes;
- provide a synthetic picture of the final balance and of the plans regarding the environmental variable.

There are also other applications of the environmental balance-sheet, which are the *area balance-sheet* and the *sector balance-sheet*. The first consists in an environmental balance-sheet which calculates and quantifies the polluting emissions produced in a specific territorial ambit by the complex of activities existing there (production, housing, infrastructures). A typical case of area balance-sheet is represented, for instance, by the district environmental balance-sheet³⁶.

On the other hand, the sector balance-sheet consists in an environmental balance-sheet which calculates the quantities of polluting substances released and the quantity of natural resources consumed by a whole economic sector, identified either by the type of good produced or by the type of technology adopted³⁷. The environmental business balance-sheet is very popular abroad,

³⁴ Sacconi L. (2005) (edited by), *Guida critica alla Responsabilità Sociale e al governo d'impresa*, Bancaria ed., Rome

³⁵ The most elaborated versions of environmental accounting support the system of physical accounts with a system of economic accounts, which records the environmental expenses sustained by companies to prevent, reduce and control pollution caused by productive processes in its various forms. In this case, environmental accounting is an integrating part of the more general system of business analytic accounting.

³⁶ As the one published by the district of ceramics of Sassuolo, in the province of Modena, or the one elaborated by Arpa Veneto on the industrial area of Porto Marghera in Venice.

³⁷ Even in this case the balance-sheet is presented within a sector environmental report, as in the case of the environmental balance-sheet of Federchimica, which has been writing it since the early 1990s within a Responsible Care international initiative, of the Oil Union, of Anie (National Federation for Electrotechnical and Electronic Companies),

especially in the countries of North Europe and North America, where it is considered by the same standards as the economic-financial balance-sheet. Indeed, the same companies specialized in the certification of the traditional business balance-sheet offer their service of certification also for the environmental balance-sheet.

Even in Italy, since the middle 1990s, the environmental balance-sheet has started becoming more popular, due to the presence of many productive settlements belonging to multinational foreign groups. We have to recognize that, for the time being, the environmental balance-sheet is used more as an instrument for public relations, finalized specifically at giving to the outside a positive business image, rather than as an actual information instrument for the external interlocutors who are more interested in environmental aspects related to the business productive activities.

7 – Main differences between traditional and environmental accounting

Being able to do accounting means having the possibility to establish a cause-effect relation between what emerges from a studied event and the reading of the results achieved.

However, the meanings of environmental accounting require a precise order. Before accounting there is the idea of counting, that is, the gathering of exhaustive data on the state of the environment and of natural resources, and on the interactions between economy, society and environment. This type of conception, born between the Seventies and Nineties, has become rapidly popular due to environment-friendly ideas emerged in Italy and in general in the whole world, which have promoted more thorough study experiences on the environment. After gathering the data on the state of the environment, there is the stage of environmental accounting or of calculating, which as we have said considers cause-effect relations, developing a report on the state of the environment. The things considered are the health of the environment, of the citizens, of the vegetation, of everything that characterizes the environment as a whole. Finally, there is the reporting stage, which if adopted allows to exploit more adequate and transparent accounting procedures.

The existing differences between the two types of accounting consist in the fact that traditional accounting considers, through a representation in countable charts, events which have occurred in the activity, interpreting macro-economic charts, without acknowledging environmental dimensions. These variables, on the contrary, are included in environmental accounting and take into consideration elements such as the use of the ground, amounts of natural resources, pollutants and other agents that develop environmental impacts.

The documents in which the two types of accounting summarize the various operations that have been carried out in the activity are defined financial balance-sheet and environmental bal-

ance-sheet; the latter takes into account the interrelations between environment and business with adequate indications of quantitative and qualitative data of the various impacts of productive activities, the propensity of how much an institution is committed to environment protection. The differences between the two documents are:

- the financial balance-sheet sums up final situations, with certain and verified values, indicating what has happened in the activity;
- the environmental balance-sheet indicates also estimated and expected values, which most times do not meet a precise match in the items of the same (for instance: emissions, impact estimates, etc., with all types of physical data, which are in some cases difficult to measure);
- the financial balance-sheet is drawn up and published in a precise moment, when the company activity comes to an end;
- the environmental balance-sheet, besides indicating the situation of a company regarding the use of environmental resources at the end of the year, also gives references to control and manage activities, through internal periodical reports which are written within the company, providing the objective basis for the decisions to make;
- the financial balance-sheet is compulsory, while the environmental one is voluntary³⁸.

There are no rules to follow or deadlines to respect, it depends on the aims and information requirements of companies, and anyone who requests to see it, can. Other basic characteristics of the environmental balance-sheet are:

- the possibility to point out clearly monetary data, relative to the expenses sustained by the company and the possibility to relate the latter to physical data;
- flexibility, thanks to schemes and criteria which can be applied to different business realities;
- it can be controlled by the people responsible for business environmental strategies (both inside the company, and those belonging to societies of environmental auditing), allowing to verify the effective expenses sustained for environment protection. Finally it conforms to ISTAT requirements, representing the basis for the drawing up of national environmental accounts.

Table 4 considers the contents of an environmental balance-sheet, applied to a business territorial context.

The data contained in table 4 describe: the presentation letter, indicating the reason why the instrument has been used, with the objectives of possible changes that the company may want to carry out, while the abstract sums up what the document illustrates in its content, and finally the preface illustrates how it was thought to use this instrument, its technical contents and political objectives.

³⁸ Only in some countries it is compulsory for industrial companies or for companies with a certain number of employees to draw up balance-sheets other than the financial one. In Holland and Denmark the environmental report is compulsory and in France the social report is compulsory for companies with more than 300 employees.

Tab. 4 Clear-method – From accounting to environmental policies

	<ul style="list-style-type: none"> • Presentation letter • Abstract • Summary • Preface
Part I organization	<ul style="list-style-type: none"> • Methodological aspects • Territorial and reference context • Expectations of the local community
Part II final balance	<ul style="list-style-type: none"> • Business priority commitments • Environmental accounts • Environmental expenses • Integrating data
Part III prevision lines	<ul style="list-style-type: none"> • Priorities for the following year

The first part of the environmental balance-sheet considers the different arrangements, through methodological profiles, the reference territory and the expectations of local communities, in which the methodological aspects indicate the building process of the system and the areas for future improvement, while the territorial context gives the territorial characteristics, analyzed in the socio-economic and demographic aspects of the environment that is being studied. Finally, future expectations of the local communities are considered through the different political decisions that will be made. The second part represents the company accounting system, the main objectives, related to the different policies that originate from various physical and monetary indicators that have been used.

Then there is the assessment of priority commitments, that is the long-term objectives and there is the analysis of the part of environmental accounting that includes the selected indicators and represents the most important part of the system.

Then, all that had been studied is written in a document that will contain the elements on environmental expenses, all the integrating data and finally, the political priorities which are to be pursued. Actually, in the case of a company or any other institution, the items characterizing the balance-sheet include: resources, waste, atmosphere emissions, pollution of water supplies, noise, environmental expenses, and finally the articulation of the complete accounting chart.

The considerations we have seen so far indicate how the development of the environmental balance-sheet is very complex, not only for its realization, but also for the vision of those who are interested.

7.1 – The environmental state in Italy

Environmental policies in Italy did not take long to arrive, although they have been much slower than many other EU countries. The legislation and laws, despite aiming at the protection and respect of environmental regulations, have not determined substantial changes and, furthermore, some instruments are still not very used or do not have adequate opportunities to be put into practice.

An example to be considered is the command and control system³⁹, one of the first instruments for environmental policies, which has identified some negative elements, but has not been able to neutralize all the unknown elements that concern the environment. Other types of instruments for environmental policies are traced back to the Iso certification, to the Emas regulation, to voluntary agreements between companies, to business incentives and others, which have done their best to protect the environment but have not eliminated completely all the problems that most times are related to lack of information and limited environmental education existing among most people.

In Italy, soon after the Conference of Rio, the National Plan for sustainable development was approved, implemented in the Agenda 21, by decision of the CIPE⁴⁰, drawn up by the Commission for global environment of the Ministry of Environment, by means of an appropriate coordinating committee. The Plan tends to select the environmental situation that exists in our country, indicating the main objectives; it considers the different social and economic characteristics and assesses carefully the idea that there are priority urgencies to deal with, especially for new possibilities of development. All this to minimize the competition of other, more evolved, countries, which have worked in the field of environmental strategy at a certain speed and long before us.

The investigation field concerns particularly the more traditional sectors, such as industry, tourism and agriculture, in order to promote in both public and private interested subjects a different approach towards processes of waste disposal and recycling.

The Plan, developed in six chapters, according to a classification which considers the different problems, should make the project easier to put into practice. Each chapter synthetically describes the Italian situation, indications of the Agenda 21, priority objectives to pursue, actions and necessary instruments to achieve them.

However, the implementations of the Plan have not been very indicative and for this purpose, the Ministry of Environment has proposed the creation of a Commission for sustainable development, to re-launch the problem, update the programme and reinforce the implementing instruments.

In Italy, the main policies for environment protection have been particularly directed to the possibility of regulating the various flows of pollution and not to protecting the environment.

³⁹ Command and control is an instrument for environmental policies, which is based on the issuing of regulations and on their relative control and application. It has been one of the first instruments (since the Seventies) that has kept to community legislation to manage environmental policies, but since the Nineties, in contraposition to this system, voluntary instruments have been introduced, finalized at the co-assumption of responsibility of the productive system (for instance Emas). Source: "La natura nel conto", glossary.

⁴⁰ CIPE, Inter-ministerial Committee for Economic Planning.

Evidence of this is given by the decree law 3rd April 2006, n. 152, about “Regulations regarding the environment”, which rewrites most of the regulations on the environment⁴¹.

The document has 318 articles (plus the attachments) and is structured as follows:

- Part One contains common dispositions;
- Part Two disciplines SEA (Strategic Environmental Assessment), EIA (Environmental Impact Assessment) and IPPC (Integrated Environmental Authorization) procedures;
- Part Three concerns the protection of the ground and the fight against desertification, the protection of waters from pollution and the management of water supplies;
- Part four deals with waste management and regeneration of contaminated sites;
- Part five disciplines air protection and reduction of emissions in the atmosphere;
- Parte six provides for compensation against environmental damage.

The purposes of the Decree are indicated in article 2, “Promotion of quality standards of human life to be realized through the protection and improvement of environmental conditions and the sensible and rational use of natural resources”.

The main innovations introduced can be synthesized as follows:

1. integration of the discipline contained in the article with the other parts of the Decree, as well as with further measures for the implementation of relative community directives;
2. identification and abrogation of the provisions that are incompatible and definition of a transitory discipline;
3. revision of the discipline of regeneration;
4. re-definition of priorities in waste management;
5. improvement of the possibility to stipulate programme agreements;
6. improvement of the definition of temporary deposit;
7. introduction of a specific discipline on lands and excavation rocks and inert building materials which are not polluting;
8. revision of the discipline relative to waste cadastre and transport;
9. re-definition of the organization of waste management services for Optimal Territorial Ambits (ATOs), identified by regions on the basis of appropriate criteria;
10. management prospect associated to the functions of local institutions which fall in the same ATO, with the setting-up of appropriate bodies which have legal personality;
11. definition of service assignment modalities in line with the indications of the decree law 267/2000 (Single Text on Local Institutions);
12. prospect of a surveillance authority for water supplies and waste;
13. rationalization of the discipline relative to authorization by means of:

⁴¹ Pierobon, A. (2006), Gestione dei rifiuti e bonifica dei siti inquinati nel T. U. Ambientale (D.lgs n. 152/2006). Una prima lettura operativa ad uso degli enti locali, *Azienditalia*, n. 6.[III], Maggioli ed., Rimini

- bunding in a single authorization, integrated with various qualifying titles currently required for the realization and management of systems;
 - introduction of a simplified system for the renewal of authorizations for businesses which adhere to the Ecolabel system;
 - connection with the discipline of integrated environmental authorization of the decree law 59/2005;
14. adaptation of the discipline on packaging management to community directives;
15. total revisiting of the cost for urban waste management;
16. updating and revisiting of the sanctionative system.

Table 5 illustrates the regulations that have been abrogated and the ones that are still in force after the issuing of the decree law 152/2006.

Tab. 5 - regulations relative to the decree law 152/2006

Abrogated regulations	Regulations still in force
<ul style="list-style-type: none"> – Decree law 22/1997 (pre-existing chart regulation) – Law 178/2002 art. 14 (authentic interpretation of the definition of waste) – Decree law 504/1992 art. 19 (TARSU) – Decree law 95/1992 (used oils) articles 4, 5, 8, 12, 14, 15 – Law 93/2001 art. 19 (compulsory biodegradibility cotton wool buds) 	<ul style="list-style-type: none"> – Implemental decrees of the decree law 22/1997 not replaced – Decree law 95/1992 (used oils) except for abrogated articles – Decree law 99/1992 (sediment disposal in agriculture) – Law 79/1994 (MUD) – Decree law 209/1999 (PCB) – Decree law 36/2003 (Dumps) – Decree law 182/2003 (ship waste) – Decree law 209/2003 (unused vehicles) – D.p.r 254/2003 (sanitary waste) – D.M. 248/2004 (asbestos recycling) – D.lgs 133/2005 (waste incineration) – D.lgs 151/2005 (electric and electronic waste)

In Italy, the regions that have been more active with regard to help and prevention for the environment are Emilia Romagna and Tuscany.

Indeed, both regions have used a model of environmental balance-sheet applied to sectors such as agriculture, industry, and in some provinces and municipalities, satisfying results have been achieved.

Also other regions, including Liguria, Trentino Alto Adige and Piemonte have been active promoters of the project “Contare”⁴².

⁴² The project “Contare” is an interregional project cofinanced by the Ministry of Environment. Its objective is to give adequate support instruments for the assessment of environmental policies, to then achieve a model of decision-making support for environmental accounting and the assessment of environmental expenditure. It tries to define a model of decision-making support and an assessment methodology which gives the decision-maker a guide to analyze and plan environmental policies. The decision-maker will make choices through two channels: the predisposi-

In Tuscany, in 1992 the RDP was activated, that is the Regional Development Plan, which considered the period 1998-2000, and tended to base its initiatives on the environment, innovation and occupation.

The current RDP, covers the period from 2000 to 2006, with objectives that include investments in agricultural undertakings, the placement of young farmers in jobs, the training of the latter, pre-retirement, aids and restraints for some areas which are disadvantaged and excessively exploited, different agro-environmental measures, and other types of help and prevention.

The work carried out in the agricultural sector stands out because, thanks to the ARSIA⁴³, it has allowed to introduce, since 1996, very advanced methods of management counselling, on economic aspects and environmental impacts. In Emilia-Romagna, environmental accounting has also been applied in the form of various initiatives.

An example of first project concerned the possibility of focusing the project founded on water supplies. Other applications have occurred in agriculture, but the most relevant study has been the project CLEAR-LIFE which involved 18 municipalities with environmental balance-sheets and could observe the use of resources in the respective territorial ambits.

The instruments introduced have certainly determined improvements, but there is more to do. It is necessary to promote continual environmental education in order to favour processes related to the concept of “Sustainable Development”.

8 – Conclusions

In the system of business communications, the ethical-environmental account represents a document which contains an essentially qualitative report, which integrates the traditional report on management, presenting the situation and the progress of a company through different aspects (economic, social and institutional-political) of its interactions with the various communities and, at the same time, the close connection between the productive body and the environmental resources.

The acceptance of a reference model is essential not only for the reliability of the document, but for the efficiency of the latter, which has to be transparent in order to contribute to the process of value creation which is recognized to business communications.

Therefore, the ethical-environmental variable, if added to the objectives which companies are committed to pursuing, can become a critical factor for success.

tion of information flows that aim at the first type of model, which identifies the different relations and quantitative information, or the second method which gives a direction for the assessment that identifies contributes in terms of information flows which the decision-making model gives to each one of them. The products of the project will be of methodological and operational nature.

⁴³ ARSIA, Regional Agency for Development and Innovation in Agriculture.

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