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## **GREEN ACCOUNTING - THE FIFTH ELEMENT OF A THE BALANCED SCORECARD**

### **Abstract:**

Managing a company is conditioned by many factors. Among them there are ecological factors closely associated with the consumption of natural resources in the production and the capacity of the natural environment . Depletion of natural resources, constantly progressing environmental degradation are forcing entrepreneurs to focus in addition to profit maximization, also on achieving objectives for the protection of the environment.

Entities are increasingly including pro-ecological activities in its core business. Thereupon, the demand for information dealing with this area of activity is increasing and thus it becomes necessary to calculate and determine the costs associated with this segment. Appearing in the economic practice problems with the identification, measurement, valuation and disclosure in the costs and benefits statement of pro-environmental projects is a challenge for modern accounting . Taking the measurement of appearances and processes associated with the natural environment may consist of modification in the already existing accounting system or the separation of the environmental accounting system. For the purpose of generating, processing and presentation of environmental information, it is considered necessary to integrate management accounting and financial accounting tools.

Pro-ecological activities of the enterprises are no longer considered only as a source of cost to them, but are increasingly being recognized as an asset, perceived in the sphere of strengths and opportunities for the future. The need to disclose the financial aspects of environmental protection in the company financial statement is dictated by the economic consequences of these activities affecting its property and financial situation. Currently reporting covering environmental issues goes beyond the typical financial statement, representing mostly a separate report or a separate chapter of the statement and information concerning costs associated with environmental protection are usually qualitative data and do not indicate their impact on the company financial position.

### **Keywords:**

green accounting, Balanced Scorecard, cost accounting,

**JEL Classification:** M49

## **Green accounting - the fifth element of a the balanced scorecard**

Managing a company is conditioned by many factors. Among them there are ecological factors closely associated with the consumption of natural resources in the production and the capacity of the natural environment [Messner, 2006, p. 143] Depletion of natural resources, constantly progressing environmental degradation are forcing entrepreneurs to focus in addition to profit maximization, also on achieving objectives for the protection of the environment. Entities are increasingly including pro-ecological activities in its core business, which increase the demand for information about the activities of the company in the sphere environmental protection [Filipiak, 2010, p. 5]. It becomes necessary to calculate and determine the costs associated with this segment and their measurement must be included in the existing accounting systems [Messner, 2006, p. 149]. Appearing in the economic practice problems with the identification, measurement, valuation and disclosure in the costs and benefits statement of pro-environmental projects is a challenge for modern accounting. [Węgrzyńska, 2013, p.9]

### **Green accounting**

The increasing interest of entities in environmental protection forces financial services to adapt traditional accounting system to the requirements of eco-friendly activities. Units operating in the field of this protection adjust their accounting systems in a way as to provide the necessary information on the activities carried out. Green accounting (as defined in the Accounts and Estamimiaties Committete - Malbourne) is a process that provides information about the environment and the impact of human activities on the environment. This information can be used, at a later stage, in the managerial decision-making. The Committee believes that green accounting is both an expression of monetary and non-financial (physical) actions of the entity. However, according to the definition of the United States Environmental Protection Agency, green accounting is designed to disclose environmental costs for internal recipients who would be motivated to identify ways of reducing or avoiding these costs and at the same time to strive to improve the quality of the environment. It can therefore be concluded that green accounting is an accounting department, which takes into account, arising as a result of the past events, environmental costs. It is a system of continuous and

systematic collection of information, including its processing (control), in the field of environmental protection undertaken by man, whose aim is the reduction and / or removal of environmental costs. Green accounting is also a tool to facilitate decision making related to the pro-ecological activities of entity (e.g. environmental projects). A characteristic feature that distinguishes it from the traditional meaning of accounting is that green accounting has two levels: monetary and non-monetary. Research carried out in the countries of the “old” European Union (Spain, France) show that the entities that have incorporated elements of green accounting to the traditional accounting system eliminated in 50% difficulties in obtaining environmental information. Economic information prepared in such a manner supported the managerial decision-making processes, and not only in the field of environmental protection. It is also important that the knowledge provided with additional recognition in the accounts of the environmental effects, as well as environmental information in the financial reports was the subject of competition in the local market of these entities and contributed to profit maximization in the long term.

Green accounting includes inter alia [Messner, 2006, p.146]:

- identifying and seeking measures to mitigate the adverse environmental effects of traditional solutions of accounting practices;
- identification, measurement and valuation of environmental costs within the traditional cost accounting;
- developing new forms of activity measurement, reporting and evaluation for the internal and external purposes;
- developing new financial and non-financial forms of accounting system, information systems and control systems in order to encourage making more environmentally friendly management decisions;
- identification and examination of problems and searching for compromise solutions to improve the areas where the financial and environmental criteria are mutually in conflict.

Table 1: Objectives and tasks of green accounting

Objectives	Tasks
<ul style="list-style-type: none"> <li>– Creation of financial and non-financial information system for managing and monitoring of environmental protection.</li> <li>– Conceptualization of generally acceptable standards of the environmental protection reporting and stating the principle of measurement, benchmarking and recommended policy.</li> <li>– Application of practices and systems of value creation from environmental management, including its protection.</li> </ul>	<ul style="list-style-type: none"> <li>– Measurement of assets, liabilities, expenses, revenues and extraordinary gains and losses related to economic events associated with environmental protection.</li> <li>– Documentation and inventorying of all business transactions of the enterprise concerning environmental protection.</li> <li>– Preparation of reports, analysis and evaluation of economic events that consist of the activity referred to as the environmental protection.</li> </ul>

Source: P. Szczypa, *Narzędzia rachunkowości wspomagające działalność proekologiczną przedsiębiorstw w Polsce*, CedeWu Sp. z o.o., Warszawa 2012, s. 81.

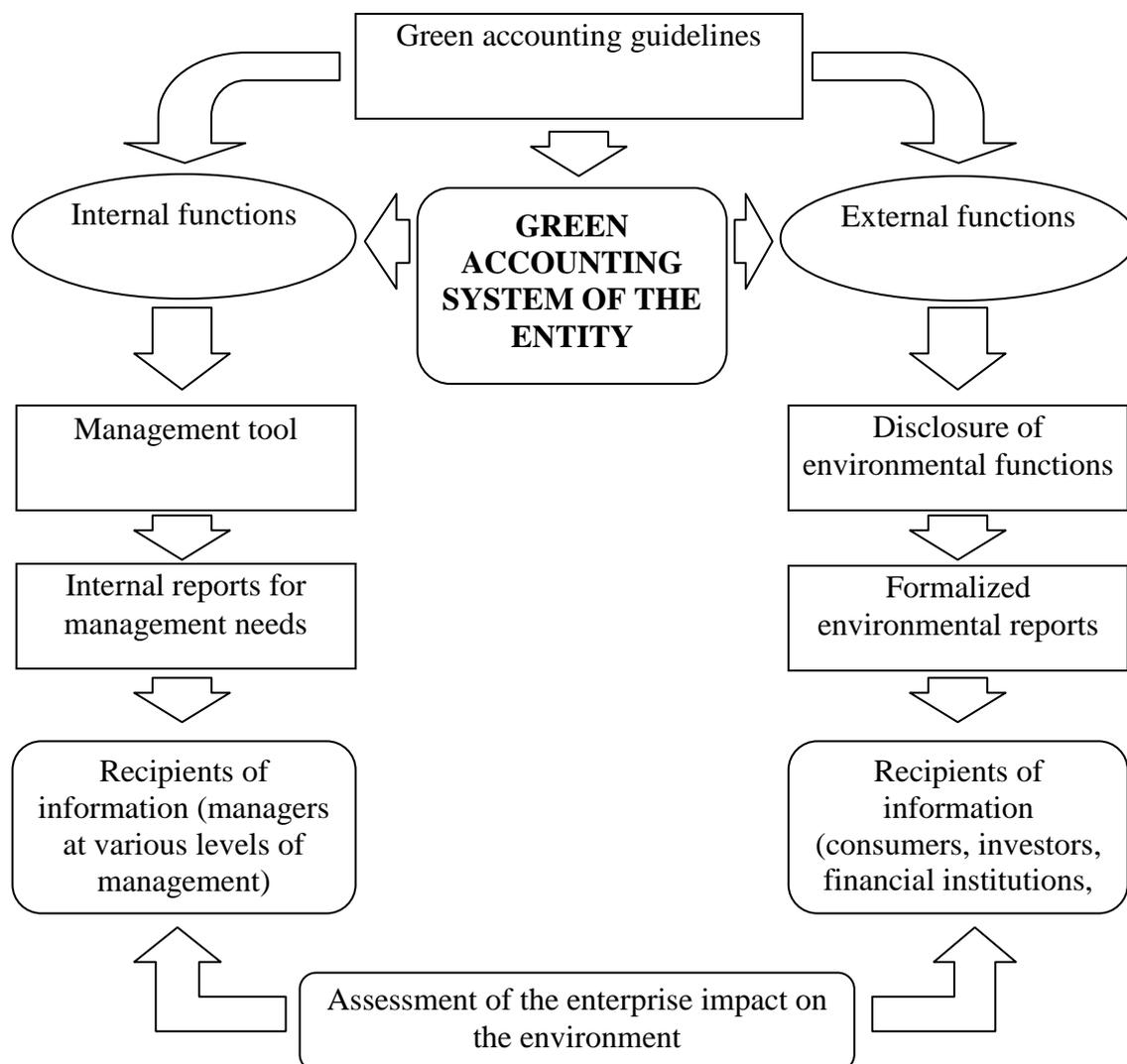
Bearing in mind that the pro-ecological activities of the enterprises are usually a small part of its business, the benefits from obtaining information about the activities for the protection of the environment through accounting tools should be significantly higher than the cost of its operation. Thus, the cost of operation of green accounting in the enterprise must be significantly lower than the benefits arising from it. [Filipiak , 2010, s. 16]

### **Green accounting in the accounting system of enterprises**

Financial and management accounting in the enterprise actions to protect the environment play an important role mainly by providing the necessary information for decision-makers. The effectiveness of performance of the information function of accounting depends primarily on the selection of the tools used for this purpose. Financial Accounting mandatory uses the same tools in every enterprise, but they may differ in method of application for needs of environmental protection. Selection of management accounting tools is an individual matter of enterprises. [Filipiak, 2010, p. 16].

Despite the passage of years standards for principles of measurement, documentation, records and accounting for environmental protection costs have not been developed yet. Depending on decision-making aspects once it could be significant investments for environmental protection, another time costs of depreciation of fixed assets for environmental protection. [Karmańskiej, 2007, p. 170]. Measurement of phenomena and processes associated with natural environment depends on the introduction of modifications to the already existing accounting system, or separation of the green accounting system. Figure 1 presents functions of green accounting in the enterprise.

Figure 1. Functions of green accounting in the enterprise



Source: *Standardy rachunkowości wobec wyzwań współczesnej gospodarki, Tom III Problemy rachunkowości zarządczej, rewizja ksiąg rachunkowych, kontrola i audyt wewnętrzny*, praca zbiorowa pod red. Z. Messnera, Wydawnictwo Akademii Ekonomicznej im. K. Adameckiego w Katowicach, Katowice 2006, s. 151.

Green accounting in an analogous manner as the accounting system performs its functions under: [Messner, 2006., p. 151]

- financial green accounting, referred to as “external”, which by disclosing environmental information to external recipients, allows to determine the negative effects of enterprise on environment, focusing on the preparation of reports containing data concerning environmental protection costs, assets and liabilities – is the source of data on environmental protection in terms of activities that have already occurred in the company;
- management green accounting, referred to as “internal”, defined as identification, collection, estimation, analysis, internal reporting and use of information on flows of materials and energy, data on environmental costs and other information provided to decision-makers in the enterprise. Internal accounting, depending on the needs and capabilities of the enterprise may be used, inter alia, for [Messner, 2006, p. 153]:
  - introduction the new technologies to the production process, reducing its adverse impact on the environment;
  - better management of raw materials (saving of raw materials consumed in the production process) and waste (recycling them);
  - identification of environmental cost of the enterprise hidden in the total costs and allocation them to the specific projects, processes or areas directly responsible for them;
  - determination of effectiveness of pro-ecological activities in the enterprise by comparing those costs incurred for this purpose and the benefits obtained;
  - creation of development strategy of the enterprise in accordance with the requirements of ecology, including rules and regulations in this regard;
  - improving the image of the enterprise as environmentally conscious and thus better perceived by society.

With an increase of social care for the environment, interest in eco-friendly products supplied to the market, not only in the area of their quality, but also fabrication, increasingly gaining a competitive advantage in the market will not only require

compliance with environmental standards, but also building ecological image of the company.

Regardless of whether in the enterprise for pro-ecological management, existing accounting system was modified, or isolated from the general one, available accounting tools are useful in varying degree in environmentally friendly management (Table 2).

Table 2. Usefulness of particular accounting tools in pro-ecological management

	Accounting Tools	Usefulness for the ecological management		
		small	medium	big
Financial Accounting	Accounts (accounting records)		x	
	Systematic cost account		x	
	Financial reporting	x		
Management Accounting (sample tools)	Variable costs account			x
	Costs of actions account			x
	Target costs account			x
	Costs of the product life account			x
	Quality costs account		x	
	Budgets			x
	Scorecard			x

Source: B. Filipiak i inni, *Rachunek kosztów w ochronie środowiska*, CeDeWu Sp. z o.o., Warszawa 2010, s. 15.

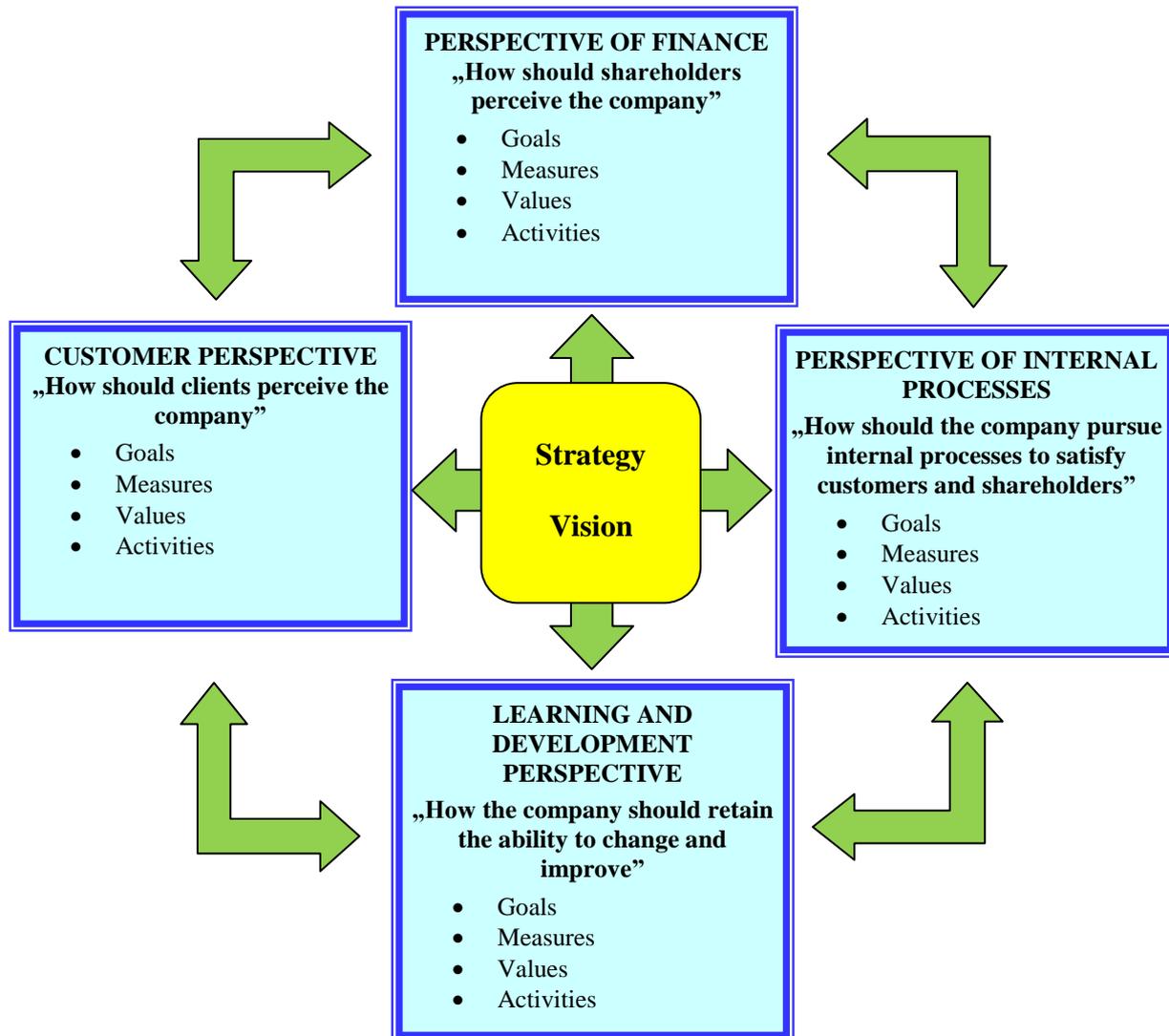
Table 2 shows that the most important role in this process of pro-ecological management plays the management accounting. Equally important is the selection of accounting tools and their utilization, which affect the effectiveness of management in the enterprise.

### **Green accounting as a component of the Balanced Scorecard**

Balanced Scorecard is a tool, which gives the possibility to monitor the degree of vision, mission and strategy realization by the organization by introducing number of logically grouped gauges. This measures form a coherent management system, based not only on the simplest to describe, calculate and track financial indicators, but

also on the criteria more difficult to measure [www.economicus.eu]. In theory it is based on four perspectives (Fig. 2).

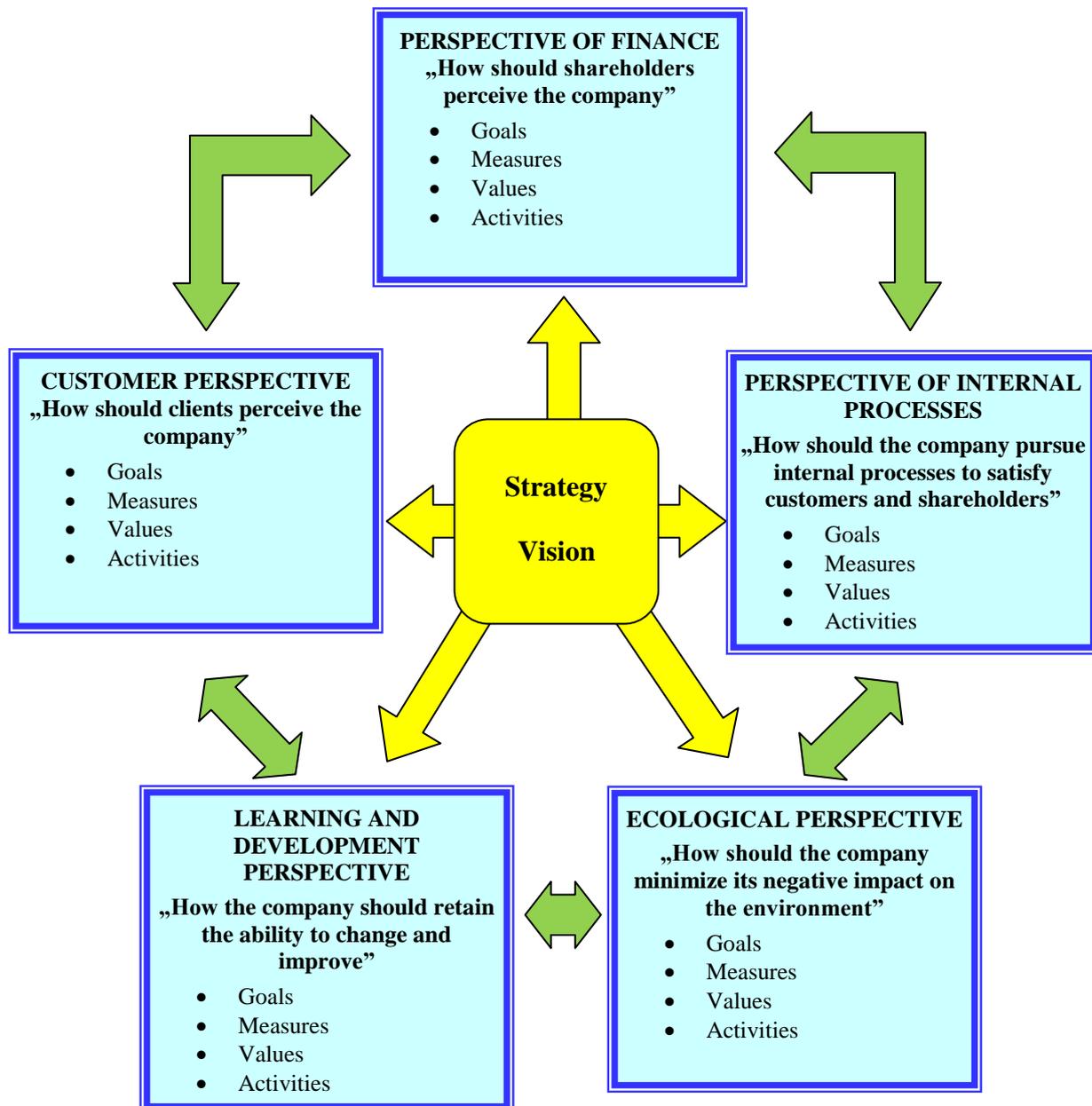
Figure 2. Visualization of the Balanced Scorecard



Source: Kaplan R.S., Norton D.P., The balanced scorecard. Translating strategy into action, HBSP

Taking into account the issues of pro-ecological management which importance is increasing for many companies, each of the perspectives shown in the Figure 2 can be attributed to specific actions that are reflected in the environmental costs. However, growing importance of pro-ecological management, particularly in case of the companies that activities have large impact on the environment, through the manufacturing process itself or by the product being manufactured, is proposed in the framework of the Balanced Scorecard to extract additional perspective - Ecological Perspective (Fig. 3).

Figure 3: Visualization of the Balanced Scorecard, taking into account the Ecological Perspective.



Source: own.

Ecological Perspective refers to pro-ecological internal processes. In this perspective new and key pro-ecological processes are identified, that will enable the company to create the positive image that will attract and keep customers and meet the expectations of stakeholders. These processes must be carefully designed and measures should focus on processes, including those innovative, having the greatest impact on customer satisfaction and achievement of goals, including financial ones.

To illustrate the proposed solution it can be used LOTOS Group S.A. and data contained in its annual report for the year 2012. One of the three pillars of social responsibility strategy of LOTOS Group till year 2015 is environmental responsibility{Annual Report, LOTOS GROUP}. A key objective of the CSR Strategy of LOTOS Group (Ecological Perspective) in the area of management of natural resources, in the production process is to reduce the environmental risks and the desire to minimize the negative impact on the environment. This task is realized through the achievement of goals such as: applying high standards of extraction, production and processing of hydrocarbons, fulfilling demanding environmental standards in the production, transportation and sale of petroleum products and in mining operations using the best currently available techniques and rules of conduct and constant analyzing of the opportunities offered in this field by new technologies. An additional aim is to identify and develop opportunities of obtaining energy from renewable sources.

Activities aimed at achieving these objectives are: implementation by the company only environmentally friendly technologies, based on the best available solutions with low emissivity and high efficiency of production processes.

Measures characterizing the actions taken is, inter alia, the reduction in the year 2012 compared to 2011 CO<sub>2</sub> emissions by 3% and water consumption by 2%, while increasing gas extraction by 30% and oil by 15% and share in the fuels market by 0.5%. The result of these actions was reduction in expenditures due to air pollutant emissions by 31% and water consumption by 20%.

### **Cost accounting in the environmental protection. Records of the costs and benefits of the environmental projects**

Pro-ecological activities of the enterprises are no longer considered only as a source of cost to them, but are increasingly being recognized as an asset, perceived in the sphere of strengths and opportunities for the future. For this reason, environmental reporting, informing the enterprise surroundings about ecological aspects of its activities, is becoming more common. The need to disclose the financial aspects of environmental protection in the company financial statement is dictated by the economic consequences of these activities affecting its property and financial situation, because the pro-ecological activity is included in the price of products and

impacts the financial result [Filipiak, 2010., s. 30]. Currently reporting covering environmental issues goes beyond the typical financial statement, especially in the case of these enterprises for which it is one of the priorities, representing mostly a separate report or a separate chapter of the statement. Information concerning costs associated with environmental protection are usually qualitative data and do not indicate their impact on the company financial position. Only a few publish so-called "eco-balances", demonstrating their technical data combined with quantitative information.

In the year 1998 operating under the auspices of the United Nations group of experts from International Standards of Accounting and Reporting (ISAR) made recommendations regarding the accounting of environmental resources, as well as proposals to include to financial reporting environmental costs and liabilities [Węgrzyńska, 2010, p.124]. This involved posting new positions in the enterprise balance sheet and profit and loss account. Basic concepts from the area of green accounting are presented in Table 3.

In accordance of the IRAR recommendations environmental costs should be recognized in the period, in which they were identified and considered as assets. They should also be capitalized and its depreciation as an expense in the current and future period should begin, or should immediately charge the income statement [Kuśmierski, 2000, p.153].

Table 3. Terms appearing in green accounting and environmental reporting in accordance with ISAR recommendations

Definition	Meaning
Environment	<ul style="list-style-type: none"> <li>▪ all our natural, physical environment, including air, water, land, flora and fauna and non-renewable natural resources such as fossil fuels and minerals</li> </ul>
Environmental costs	<ul style="list-style-type: none"> <li>▪ costs of actions taken or environmental costs that will be incurred, which are to serve environmental management</li> <li>▪ costs arising as a result of implementation of the environmental tasks and requirements of the entity</li> </ul>
Environmental assets	<ul style="list-style-type: none"> <li>▪ environmental costs, that the entity capitalized because they met the criteria of being recognized as assets</li> </ul>
Environmental liabilities	<ul style="list-style-type: none"> <li>▪ liabilities related to the environmental costs of the entity, that met the criteria of being recognized as liability</li> </ul>
Capitalization	<ul style="list-style-type: none"> <li>▪ recognition of the environmental cost as an integral part an asset related to it or standalone asset</li> </ul>

Source: M. Węgrzyńska, *Zielona rachunkowość*, Wydawnictwo Wyższej Szkoły Bankowej w Poznaniu, Poznań 2013, s.125.

Despite the passage of many years since the publication of the ISAR recommendations, standards for the principles of measurement, documentation, records and accounting for the environmental costs were not developed [Karmańska, 2007, p. 170]. Therefore, enterprises include environmental protection costs account in its accounting system, often according to their own needs. In the literature there are many proposals to solve this problem.

In Polish business practice operating expenses of the enterprise may be recorded in one of three variants [Filipiak, 2010, ps. 27]:

- the first variant – inventory of costs in the generic account (depreciation, materials and energy consumption, external services, taxes and fees, salaries, social security and other expenses by nature);
- the second variant – inventory of costs in the functional account (by place they arise, which are organizationally separated in the enterprise functions, cells or working positions);
- the third variant - developed (keeping records at the same in the generic and functional account).

The most useful for the cost keeping of the ecological activities is the third variant, which is implemented in large enterprises. It creates the possibility for a systemic, but not congeneric, separation of the costs of the protection of environment, which are characterised by a large generic range and are scattered among many groups of costs.

M. Węgrzyńska proposes in the entities, in which the ecological activities are of secondary importance, to provide the possibilities for separating the environmental costs without any major changes in the accounting system by the extending the group 4 of the chart of accounts - generic costs with analytic accounts that register the costs in the field of the environment, while in the group 5 to create new synthetic account called "The costs of the environmental protection".

The presented solution is simple, however not very useful for enterprises, in which the pro-ecological activities play a big role. In such enterprises the most beneficial will be the developed variant of costs characterised by [Węgrzyńska, 2013 p. 113]:

- The settlement of costs in time;

- The classification of costs in the generic accounts;
- The settlement of costs grouped in the particular entity accounts;
- The settlement of costs in the places where they develop, with the separation of those that must be settled in time.

Conducting green accounting in an enterprise may be a source of benefits in two areas: organisational and financial. [Szczyba, 2013, p. 200] The organisational benefits are primarily:

- The implementation of the effective informational system, which is subordinated to the realisation of the established environmental objectives;
- The creation of the system, which will warn about the undesired (negative from the point of view of the environment weal) company's relationships with the environment;
- The implementation of the sustainable development in the micro-sized entity through the transformation of environmental aspects to the other spheres of his activity;
- The conformation of the pro-ecological awareness of the enterprise's employees.

The financial benefits of conducting green accounting may be the consequence of:

- The exclusion of the costs of unnecessary actions (e.g. partial or total elimination of undesirable downtime, elimination of unnecessary stocks and more efficient use of resources, reducing waste, etc.);
- The reduction of taxes and fees associated with the environment;
- The reduction of the risk of a negative impact on the environment (failures and unforeseen consequences of the operation of the entity);
- The increased efficiency of the ecological activities, which may result in a reduction of the unit cost of manufactured products and its permanence in the long term;
- The increased competitiveness of the enterprise on the market, perceived as environmentally friendly, primarily by the purchasers of its products.

## Summary

The changing awareness of the customer society, caused by the evolution of the attitude to the environment and heading to the preservation of the natural resources in the best possible condition, has a direct and indirect impact on the managers of the companies to increase their involvement in the pro-ecological activities. While making decisions about the pro-ecological activities, managers need an access to the current ecological information, not only about the past events, but above all those concerning the future. The basic accounting tools do not provide sufficient environmental information. The need to meet the more and more rigorous environmental standards and the rising costs of the environmental exploitation, enforce the managers to perceive the environment in a long-term perspective. Not only do they take into account the costs of removing environmental damages and restoring the ecological trust, but also have in mind the image of the environment-friendly, modern and sensitive to the ecological issues enterprise, which produces ecological products and cares about the environment. The proper selection of the accounting tools, providing information about the operation of the enterprise in the area of ecology, has a significant influence on the effectiveness of the pro-ecological activities. It is also necessary, for the purpose of generating, processing and presentation of the environmental information, to integrate in the enterprise the management accounting tools with the financial accounting tools. The proper selection of them, which must be subject to the enterprise scale and the degree of involvement in the pro-ecological activity, will conduce the acquisition of the ecological information enhancing the effectiveness of the entity's operation for the benefit of the environment.

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