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## ECOLOGICAL INVESTMENTS AS AN ELEMENT OF ENVIRONMENTAL MANAGEMENT: CASE STUDY OF AGRIBUSINESS COMPANIES

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**Abstract.** The aim of this study is an attempt to obtain an answer to the question: how important element of environmental management is the introduction of ecological investments in agribusiness companies? Research was carried out using a diagnostic survey among agribusiness companies from the Pomorskie voivodeship of Poland, which introduced some ecological investments between 2004 and 2014. The research showed that the ecological investments now constitute a fundamental form of the execution by the agribusinesses of environmental tasks that arise from the concept of sustainable development. The investments contribute to the prevention of the progressing degradation of the environment and any actions recognized as environmentally harmful.

**Key words:** sustainable development, environmental management, ecological investments, ecological investment expenditure

### INTRODUCTION

Sustainable development, despite being a widely used phrase and idea, has many different meanings and, therefore, provokes many different responses. In broad terms, the concept of sustainable development is an attempt to combine the growing concerns about a number of environmental problems with socio-economic issues (Hopwood et al., 2005). A similar point of view is presented by Tisdell (1988), Giddings et al. (2002) or Sobczyk (2014).

The concept of sustainable development is mostly perceived from the point of view of the macroeconomic scale, however its realization requires first of all a pro-ecological orientation in company management. This also applies to agribusiness companies.

The notion of environmental management means managing the use, protection and shaping of the natural environment. This notion may also refer to environmental management at the level of the state, local authority or a business unit. Management of the environment, integrated with a general system of management, is referred to as ecological (environmental) management (Poskrobko and Poskrobko, 2012).

It follows, therefore, that environmental management identifies in itself some aspects of the general function of managing an organization, which pertain to controlling and manipulating the impact that the organization has upon the natural environment. This term refers to the entirety of problems of the impact exerted by the organization upon the environment, which have some importance for reaching targets described in the organization strategy and an increase in its competitiveness on the market (Lisowska-Mieszkowska, 2007). It must be stressed that environmental management occurs in an organization where protective processes are integrated with production processes and environmental management is integrated with the management of the entire organization (Jastrzębska, 2007).

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Directing the activity of agribusiness companies towards environmental protection is forced by the necessity to survive and develop the company in a variable and demanding environment. The orientation of the company's targets towards environmental management may also be caused by compulsion or some other particular advantage which allows the realization of other strategic targets of the company. This kind of activity may be partially forced by the society which wishes to function in a clean environment and consume healthy, quality products (Adamczyk and Nitkiewicz, 2007).

The key role, therefore, is played by ecological aspects, their environmental efficiency and the increasing scale of difficulty for companies resulting from those aspects. Knowledge of the mechanisms of interaction of the ecological policy and tools for its realization determines the bases for the necessary adjustment in the field of business. It also constitutes an important element for the assessment and purposefulness of additional, voluntary engagement of small and medium businesses in the process of rationalization of the interaction with the environment (Zuzek and Mickiewicz, 2013).

The research problem boiled down to answering the question: how important element of environmental management is the introduction of ecological investments in agribusiness companies? The research, using a diagnostic survey, was conducted in February 2015 in the Pomorskie voivodeship of Poland among companies which had made some ecological investments between 2004 and 2014. The survey questionnaire was specially designed for the purpose of this study and distributed to the companies via e-mail.

## TYPES OF ECOLOGICAL INVESTMENTS IN AGRIBUSINESS COMPANIES

For many years, Polish businesses have been wasting water, energy and resources and recklessly increasing the amount of waste. All that has forced the necessity to introduce in those businesses some appropriate changes in their management towards sustainable development, thus towards the prevention of negative processes in the natural environment.

The survival and development of modern businesses in the ever-changing market conditions have brought about the necessity to introduce continuous changes in the organization, management, methods and ways of functioning and production technology. It is worth

clearing what those changes mean. The subject literature points out that the notion of *change* is to be understood as two basic dimensions:

- contents (or the result of the change) which refer to people, their cooperation and organizations created by them, products, technology as well as social, economic and political relations;
- the way the change is introduced, which pertains to the use of the methods and techniques of its introduction, thus from the process of change (Błaszczuk, 2005).

A significant fact in the introduction of changes is that the new solutions become an answer of science and knowledge to rapid changes in the functioning of the business and its close and more distant surroundings. This is becoming the reason for the introduction of various investments. The subject literature conveys various notions and definitions of investment. As a rule, the following kinds of investments can be distinguished in companies:

- investments that are accumulated means and savings (income or products) intended for further development of production or services,
- investments which constitute economic expenses that are borne to reproduce various resources within the company,
- investments which constitute investing and multiplying the capital by making transactions on the capital or property markets, etc.,
- investments as creating, recreating and growth of the company assets (including fixed assets) (Towarnicka, 2004).

Investments are also defined as past renunciations or sacrifices and postponing the current consumption to uncertain future, or as investing means now into something of a certain value in order to reach the desired effects in the future (Kurek, 2006).

Investments are most generally divided into:

- financial – investments conditioned by financial operations,
- material – which means creating new fixed assets or recreating and modernizing the existing fixed assets of the company,
- non-material – investments in professional training or research (Iwin and Niedzielski, 2002).

The realization of the leading target of agribusiness companies, which is survival and increased competitiveness, requires the application of appropriate means

in the management system, which include, among others, investment enterprises (Kuczowic, 2002). This also means the introduction of widely understood ecological investment in the companies. A necessary condition for an investment to be recognized as ecological is its management towards the environmental protection (Wielewska, 2015).

Investments which aim at environmental protection fall into two categories, according to the subject literature: *end-of-pipe* and *integrated*.

The essence of *end-of-pipe* investments means not interfering with the production process as production without this investment may be continued, however it reduces or neutralizes pollution generated in the production process. These expenses, borne by the company, are entirely included in the expenses for environmental protection (Wielewska, 2013).

Another kind of investments – the *integrated* investments – prevent pollution and lead to a decrease in the amount of pollution generated by modifications to technological processes (replacement or modernization of the production lines, purchase of additional equipment), which causes the production to become cleaner and environment-friendly (Zbaraszewski, 2008).

Awareness of the impact of agribusiness companies, which includes:

- supplying materials and means of production, machines and other equipment,
- production services (e.g. mechanics, construction/redecoration, plant protection),
- purchasing, storing, sorting and packing, transport, bulk and retail trade in agricultural products,
- processing agricultural products (mills, feed mills, bakeries, slaughterhouses, butchers', dairies, fruit processing factories) (Pietrzak and Senczyszyn, 2003),
- forces minimizing unfavourable effects and threats and undertake actions whose purpose is to retain the clean natural surroundings in their best condition.

Ecological investments in agribusiness lead to the achievement and preservation of the state of sustainable development (Wielewska, 2015).

## SOURCES OF FINANCING OF PRO-ECOLOGICAL INVESTMENTS IN AGRIBUSINESS COMPANIES

The appropriately high position of the agribusiness company on the market is not only dependent on its efficient current management, but also on taking optimal decisions concerning the development of the business, current investments or sources of their financing (Sierpińska and Jachna, 2007). For the majority of these companies it is their own capital, which constitutes over 50% of the necessary means – sometimes not enough to keep the company running, let alone to transfer any of those means to ecological investments (Zuzek, 2013).

Facing the challenges which the current management of a small or medium company brings, and the necessity to make ecological investments, the companies have to make a choice of the source of their financing (Table 1).

In the tradition of Polish business exists a belief in having to possess own capital as a firm and safe source of financing the business activity. The basic sources of financing ecological investments have been presented in Table 2.

Changes on the market concerning the approach to financing issues, supported by the subject literature, have caused evolution in the previous approach of business owners. By reaching for external capital, they choose from a variety of possibilities. This way they can proceed with the investments.

## RESEARCH RESULTS

Survey research was conducted among 172 agribusiness companies from the Pomorskie voivodeship in February 2015. The sample selection was intentional as the survey questionnaire form was addressed at the companies which have made some ecological investments between 2004 and 2014. The surveyed companies operate in rural areas. The research included an online survey which was e-mailed to the companies concerned. The survey asked the company owners (or employees responsible for environment protection) questions on the survey form.

Among all the surveyed companies, the most were small and micro businesses. The percentage of the small businesses was 43% of the total and another 28.5% constituted businesses which employ up to 9 people. Large companies, which employ between 50 and 250 people,

**Table 1.** Methods of financing the ecological investments, depending on the assumed criteria  
**Tabela 1.** Metody finansowania inwestycji ekologicznych w zależności od przyjętego kryterium

Criterion Kryterium	Subdivision Podział	Examples of the financing method Przykłady metod finansowania
Property Własność	Public Publiczne	Co-financing Dofinansowanie
	Private Prywatne	Credits, loans, venture capital Kredyty, pożyczki, venture capital
Engagement Zaangażowanie	Direct Bezpośrednie	Credit, surety, own capital Kredyt, poręczenie, kapitał własny
	Indirect Pośrednie	Business incubators, technological parks Inkubatory przedsiębiorczości, parki technologiczne
Sources of financing Źródła finansowania	Own capital Kapitał własny	Owners' shares, reinvested profits, venture capital Udziały właścicieli, reinwestowane zyski, venture capital
	Foreign capital Kapitał obcy	Credit, loans, commercial vouchers, bonds, factoring, forfaiting, franchising Kredyt, pożyczka, bony komercyjne, obligacje, faktoring, forfaiting, franchising

Source: Sosnowska et al., 2003.

Źródło: Sosnowska i in., 2003.

**Table 2.** Basic sources of financing the ecological investments  
**Tabela 2.** Podstawowe źródła finansowania inwestycji ekologicznych

Own capital – Kapitał własny		Foreign capital Kapitał obcy
Internal financing Finansowanie wewnętrzne	External financing Finansowanie zewnętrzne	
Self-financing from accumulated profit Samofinansowanie z kumulowanego zysku	Increasing share capital Podwyższenie kapitału zakładowego	Credits and loans from banks and non-bank institutions Kredyty i pożyczki instytucji bankowych i nie bankowych
Depreciation write-offs Odpisy amortyzacyjne	Direct sales Sprzedaż bezpośrednia	Suppliers' credits Kredyty dostawców
Hidden reserves Ciche rezerwy	Share/bond emission Emisja akcji/obligacji	Receivers' credits Kredyty odbiorców
Other Inne	Venture capital	Other Inne
	Subsidies and grants Subwencje i dotacje	

Source: Sosnowska et al., 2003.

Źródło: Sosnowska i in., 2003.

**Table 3.** Size of the surveyed agribusiness companies  
**Tabela 3.** Wielkość badanych przedsiębiorstw agrobiznesu

Size of the surveyed agribusiness companies Wielkość badanych przedsiębiorstw	N = 172	% of the total % ogółu
Micro – Mikro	49	28.5
Small – Małe	74	43.0
Medium – Średnie	37	21.5
Large – Duże	12	7.0

Source: own elaboration based on the research conducted.

Źródło: opracowanie własne na podstawie przeprowadzonych badań.

constituted 21.5% and those that employ over 250 people constituted 7%.

It follows from the analysis of Table 3 that ecological investments were carried out regardless of the size of the businesses.

The operational area of the surveyed companies (Table 4) is mostly the local market, which concentrates 68% of the surveyed companies. One out of five companies produces its goods for a broader, regional market. There were also 10.5% of the surveyed companies which operate on the nationwide market and 1.7% which also operate internationally.

**Table 4.** Area of activity of the surveyed agribusiness companies

**Tabela 4.** Obszar działania badanych przedsiębiorstw agrobiznesu

Area of activity of the company Obszar działania przedsiębiorstwa	N = 172	% of the total % ogółu
Local market Rynek lokalny	117	68.0
Regional market Rynek regionalny	34	19.8
National market Rynek krajowy	18	10.5
International market Rynek międzynarodowy	3	1.7

Source: own elaboration based on the research conducted.

Źródło: opracowanie własne na podstawie przeprowadzonych badań.

Investments in the environment, which were introduced in the surveyed companies, were of two types: the so-called *end-of-pipe investments* (50%) and *integrated* (33.1%). Some of the surveyed companies have introduced mixed investments (16.9%).

There are many premises for including environmental management in the strategic management of the companies.

The motivation for taking a decision about the introduction of environment-oriented investments in the companies was varied (Table 6). For 65.1% of the surveyed agribusiness companies, an important motive was the limitation of the cost of the functioning of the organization by: decreasing the use of raw materials and media as well as the amount of waste generated. Another important stimulus was environmental protection as well as healthcare (56.4%) and reaching compliance with current laws and regulations (52.3%).

As mentioned in the theoretical part of this study, an important element of the completion of ecological investments in the agribusiness companies are the sources of their financing.

The investment enterprises in the field of ecology may be financed from many sources. It may be own capital or foreign capital.

**Table 5.** Investments in environment protection introduced in the surveyed agribusiness companies

**Tabela 5.** Inwestycje z zakresu ochrony środowiska wdrażane w badanych przedsiębiorstwach agrobiznesu

Investment group Grupy inwestycji	N = 172	% of the total % ogółu
Investments neutralizing pollution (“pipe end” investments) Inwestycje unieszkodliwiające zanieczyszczenia („końca rury”)	86	50.0
Investments preventing pollution (integrated) Inwestycje zapobiegające zanieczyszczeniom (zintegrowane)	57	33.1
Joint investments (“pipe end” and integrated) Inwestycje łączone („końca rury” i zintegrowane)	29	16.9

Source: own elaboration based on the research conducted.

Źródło: opracowanie własne na podstawie przeprowadzonych badań.

**Table 6.** Evaluation of motivation for introducing ecological investments in agribusiness companies  
**Tabela 6.** Ocena motywów wdrażania inwestycji ekologicznych w przedsiębiorstwach agrobiznesu

Specification Wyszczególnienie	N = 172*	% of the total % ogółu
Improvement in competitiveness of the company on the national market Poprawa konkurencyjności przedsiębiorstwa na rynku krajowym	47	27.3
Improvement of the company image Poprawa wizerunku przedsiębiorstwa	18	10.5
Environmental protection and people's health care Ochrona środowiska naturalnego oraz ochrona zdrowia człowieka	97	56.4
Improvement in the quality of products/services Podniesienie jakości produktów/usług	25	14.5
Reasonable use of natural resource Racjonalne wykorzystanie zasobów naturalnych	84	48.8
Reaching compliance with current laws and regulations Osiągnięcie zgodności z obowiązującymi przepisami prawnymi	90	52.3
Limiting the costs of the functioning of the organization by: decreasing the use of raw materials and media as well as the quantity of waste produced Ograniczenie kosztów funkcjonowania organizacji poprzez: zmniejszenie zużycia surowców, materiałów i mediów oraz ilości wytworzonych odpadów	112	65.1

\* Respondents' answers may not add up as the surveyed might have chosen more than one possible answer.

\* Odpowiedzi nie sumują się, gdyż badani mogli wybierać więcej niż jedną odpowiedź.

Source: own elaboration based on the research conducted.

Źródło: opracowanie własne na podstawie przeprowadzonych badań.

According to the research results presented in Table 7, the basic source of financing the ecological investments in the companies is mixed financing (68.6%).

The introduction of the environmental management requires the agribusiness companies to bear certain technological, financial and personal expenses. However, this kind of investment should be perceived as a long-term investment in the future, which may turn out to be not only a source of competition advantages but also serious financial savings.

Taking voluntary duties in the field of environmental protection is beginning to constitute an important element of the company's development strategy, while being conducive to pro-ecological orientation of management. This kind of behaviour confirms the extent of engagement of industry in the realization of the concept of sustainable development. Among the surveyed agribusiness companies (Table 8), 71.5% saw the introduction of ecological investments as a definitely necessary,

**Table 7.** Sources of financing the expenditure for ecological investments in agribusiness companies

**Tabela 7.** Źródła finansowania nakładów na inwestycje ekologiczne w przedsiębiorstwach agrobiznesu

Sources of financing Źródła finansowania	N = 172	% of the total % ogółu
Internal financing Finansowanie wewnętrzne	6	34.9
External financing Finansowanie zewnętrzne	33	19.2
Foreign capital Kapitał obcy	15	8.7
Mixed financing Finansowanie mieszane	118	68.6

Source: own elaboration based on the research conducted.

Źródło: opracowanie własne na podstawie przeprowadzonych badań.

**Table 8.** Ecological investments in agribusiness companies as a necessary condition for sustainable environmental management

**Tabela 8.** Inwestycje ekologiczne w przedsiębiorstwach agrobiznesu jako konieczny element zarządzania środowiskiem

Specification Wyszczególnienie	N = 172	% of the total % ogółu
Definitely necessary Zdecydowanie konieczny	123	71.5
Rather necessary Raczej konieczny	46	26.8
Unnecessary Niepotrzebny	–	–
Difficult to say Trudno powiedzieć	3	1.7

Source: own elaboration based on the research conducted.

Źródło: opracowanie własne na podstawie przeprowadzonych badań.

and 26.8% as a rather necessary element of environmental management.

The effects of ecological investments in the agribusiness companies ought to include: an improvement in the quality of the natural environment, re-use of waste, minimization of the amount of waste being dropped on dumping grounds, reaching a specific class of water clarity, elimination of excess of permissible concentration of gaseous pollution in the atmosphere, elimination of excess of permissible concentration of dust pollution in the atmosphere, reduction in pervasion of sewage containing non-decomposed fats and salts into the soil and ground water, and an improvement in the quality of life of the population residing in the vicinity of the operating agribusinesses.

## CONCLUSION

The natural environment is involved in the functions of the company: either directly, by delivering natural resources for the production cycle, or as a facility that must assimilate its by-products of manufacture and consumption, as well as products whose lifetime has terminated. For this reason, ecological investments in the companies constitute a fundamental element of sustainable environmental management. Their main aim is to lead to the harmonization of economic, social and

ecological aspects and reconciliation of the needs of current and future generations.

In the surveyed agribusiness companies, the issues of environmental management have been included in the process of strategic management, which is not only conducive to the introduction of ecological investments, but also helps the company to increase its competitiveness on the market and perception in the society. Ecological investments in agribusiness companies have become a necessary element of sustainable environmental management and contributed to the suppression of the progressing degradation of the environment and ecologically harmful activities.

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## INWESTYCJE EKOLOGICZNE JAKO ELEMENT ZARZĄDZANIA ŚRODOWISKIEM: STUDIUM PRZEDSIĘBIORSTW AGROBIZNESU

**Streszczenie.** Celem opracowania jest próba uzyskania odpowiedzi na pytanie, jak ważny element zarządzania środowiskowego stanowi wprowadzanie inwestycji ekologicznych w przedsiębiorstwach agrobiznesu. Badania przeprowadzono metodą sondażu diagnostycznego wśród przedsiębiorstw agrobiznesu z województwa pomorskiego, które przeprowadziły inwestycje ekologiczne w latach 2004–2014. Badania wykazały, iż inwestycje ekologiczne stanowią obecnie fundamentalną formę realizacji przez przedsiębiorstwa agrobiznesu zadań ochrony środowiska wynikających z koncepcji zrównoważonego rozwoju. Inwestycje przyczyniają się do powstrzymania postępującej degradacji środowiska i działań uznawanych za ekologicznie szkodliwe.

**Słowa kluczowe:** zrównoważony rozwój, zarządzanie środowiskowe, inwestycje ekologiczne, nakłady na inwestycje ekologiczne

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