



**Anna Brdulak**

Wrocław School of Banking

## **The importance of sustainable development – the ecological aspect**

**Abstract.** By no means may the contemporary role of sustainable development be overestimated with reference to how companies function. Competing based on the price exclusively has become insufficient in order to gain competitive advantage in the market. The increasing awareness of consumers makes a choice of an individual product dependent on more than the mere price, since the method and the conditions of manufacture, the materials the product is made of as well as the overall relations between the given company and its surrounding are all taken into consideration. What also proves to be extremely significant is the company's approach to environment-related matters. The purpose of this article is to discuss environmentally friendly solutions, including ones applied in the transport sector, starting with those being the easiest to implement and not involving high initial expenditures, to end up with projects generating costs in a short timeframe but also inducing higher savings in the long run. The author has referred to the latest studies and expert opinions in the article.

**Key words:** sustainable development, ecology, ecological transport, green logistics

### **1. Introduction**

Sustainable development has never been explicitly defined. This can be attributed to both the diversified evolution of the concept depending on the field of expertise where it develops as well as the complexity of the concept itself. However, various definitions of sustainable development provided in different sources are still worth some elaboration.

In the Environmental Protection Law, sustainable development is perceived as such socioeconomic development which integrates political, economic and social efforts, at the same time ensuring ecological balance and sustainability of



basic ecological processes. The purpose of coordination of the said efforts is to guarantee that basic needs of both the contemporary and the future societies are to be satisfied<sup>1</sup>.

The evolution of the concept was also strongly influenced by the activity undertaken by the Club of Rome<sup>2</sup>. The Club members were convinced that global socioeconomic development should rely on ecological and sustainable development which, in practice, was to be manifested in extensive harmonisation of economic activities with the potential of the natural environment.

The aforementioned definitions were complemented by Gro H. Brundtland. In a report of 1987, she claimed that sustainable development not only enabled satisfaction of the needs of contemporary generations, but also of their aspirations in such a manner that would not reduce the capacity to satisfy the needs of future generations<sup>3</sup>. According to this definition, the very basis of sustainable development is both intra- and intergenerational equality, whereas ensuring it is the key to the society's capacity to attain self-sustaining growth<sup>4</sup>.

Following the sustainable development concept, besides the matters of equality, a set of social goals of superior importance also comprises social welfare and security perceived in a broad context. The means ensuring that the said principles and social goals are achieved are the socioeconomic development as well as preservation of ecological functions<sup>5</sup>.

According to the World Conservation Strategy developed by the International Union for Conservation of Nature and Natural Resources, it was stressed that sustainable development was based on non-invasive transformation of biosphere, utilisation of human, economic and natural resources, both animate and inanimate, in order to satisfy the needs of humankind and improve the quality of life. Whenever it is possible to choose between several development options, it is necessary to conduct an in-depth analysis of outcomes the given choice involves in the short- as well as the long-term horizon<sup>6</sup>.

<sup>1</sup> Art. 3 ustawy z dnia 27 kwietnia 2001 r. Prawo ochrony środowiska, Dz.U. nr 62, poz. 627.

<sup>2</sup> The Club of Rome was founded in 1986 as an informal organisation and it was initially composed of several dozen members. They included scientists representing various fields of expertise and practitioners, especially ones related to industry. Their common goal was to develop as comprehensibly as possible an image of the contemporary stage of the humankind development, and they were primarily focused on the dynamics of this development until the dawn of the third millennium in light of the imminent threats the humankind would face.

<sup>3</sup> *Wskaźniki ekorozwoju*, ed. T. Borys, Wyd. Ekonomia i Środowisko, Białystok 1999, p. 64.

<sup>4</sup> R.K. Turner, D. Pearce, I. Bateman, *Environmental economics. An elementary introduction*, Harvester Wheatsheaf, New York – London – Toronto – Sydney – Tokyo – Singapore 1994.

<sup>5</sup> S. Łojewski, *Ekonomia zasobów i środowiska*, Wyd. Kujawsko-Pomorskiej Szkoły Wyższej w Bydgoszczy, Bydgoszcz 2007, p. 176.

<sup>6</sup> [www.iucn.org](http://www.iucn.org) [2.08.2013].

The Polish interpretation of the sustainable development notion is a direct reference to the aforementioned ones. This concept means a socioeconomic development process entailing efforts undertaken in order to integrate political, economic and social spheres, at the same time preserving the natural balance and basic natural processes. Such an approach ensures equilibrium of the entire ecosystem, both nowadays and in the future<sup>7</sup>. Some notions used interchangeably with sustainable development include ecological development, **long-lasting development** and **self-sustained development**, still the first of these terms is definitely the most popular one.

The assumptions of sustainable development are particularly relevant at present. The events of the recent years have forced managers to review their own business structures more thoroughly from the perspective of an organisation functioning in both the internal and the external environment. The economic slowdown and the increasing unemployment rate cause that the instable market requires ongoing attention and monitoring of the current players. This, in turn, is reflected in the consumers' attitudes and their perception of business. It had been confirmed by the periodical survey known as the Edelman Trust Barometer which implied that, in the year 2012, the global confidence towards business dropped from 53% to 47%. This year's Trust Barometer 2013 indicates further deterioration in the trust towards enterprises, and particularly towards their leaders, this being a direct consequence of well-known scandals involving CEOs<sup>8</sup>.

Having realised how serious the effects caused by losing the society's business confidence may be, for instance due to imposing systems potentially increasing costs of procedure compliance, referred to as **compliance costs**, and at the same time considerably reducing the options of flexible market presence, companies should particularly focus on rebuilding their credibility. What seems to be a prerequisite of successful operation in the contemporary market is the transparent guidelines for organisations pertaining to their functioning in both the internal and the external environment, in their broad understanding.

## 2. Environmentally friendly efforts of companies aimed at sustainable development

The sustainable development definitions provide grounds for the following main principles of the concept:

<sup>7</sup> *Ekopolityka w turystyce*, Instytut na Rzecz Ekorozwoju, Warszawa 1998, in: E. Panfiluk, "Problemy zrównoważonego rozwoju w turystyce", *Economy and Management* 2011, No. 2, p. 62.

<sup>8</sup> [www.edelman.pl](http://www.edelman.pl) [2.08.2013].

- inalienable right of men to use the environment and its resources,
- environmental protection for the sake of future generations,
- every country's obligation to protect ecosystems and biodiversity,
- obligation to introduce national and international environmental standards and environment monitoring,
- obligation to assess environmental consequences of the economic ventures planned (environmental impact assessments),
- provide other countries with assistance in solving environmental problems,
- sharing information on the scope of environmental protection and sustainable utilisation of natural resources,

Applying the foregoing principles to how enterprises function, one may claim that the term **sustainable** is more and more extensively translated into a business strategy which, in light of limited resources (also natural), focuses on their smart utilisation. Therefore, such importance is attached under the concept of sustainable development to building a company's ecological awareness. Appropriate attitude towards the environment and special care for the ecosystem balance have positive effects on the social trust.

According to the Millennium Ecosystems Assessment and the UN IPCC Assessment Report, natural environment is negatively affected by the growing global population and the resulting increase in both production and consumption. Effects of these phenomena can be observed in the air quality deterioration or the reduced access to drinkable water. The biological balance of ecosystems is also upset. A natural consequence of such unfavourable changes is the expectation that entities operating in the market should undertake intense efforts for the sake of neutralisation and prevention of negative environmental impacts. Examples of those include not only implementation of environment-friendly technologies and compliance with strict legal requirements, but also active involvement in nature conservation.

It should be noted that entailing environmentally friendly activities in a company's business strategy improves the efficiency of utilisation of the company's resources in the long run and this, in turn, has positive influence on the company's market position. A perfect example to support this statement is the Eco Management and Audit Scheme (EMAS) functioning in the European Union since 1993 (since 2004 in Poland). It is a voluntary instrument applied by companies in order to verify their internal processes from the perspective of interaction with the surrounding. It supports the planning of activities aimed at sustainable production and consumption as well as industrial policy to a considerable extent, enabling identification and reduction or even complete elimination of waste from the processes the given company handles.

In order for the efforts undertaken by an enterprise to have truly pro-environmental nature, and not only to serve the purposes of the mere 'green

image'building, the entire organisation must be involved. In this respect, it is the top management that must play the key role, since their influence on the orientation of the company's organisational culture is definitely the largest. And only when the pro-environmental efforts are inscribed in the organisation's business strategy as its coherent component are they to bring notable benefits.

Introducing environmentally friendly solutions often involves changes which must be taken into consideration under the framework in which the company has been functioning. It proves to be particularly difficult at present, when the instable economic situation forces organisations to cut expenses and the main priority is market survival. Saving funds at all costs may lead to deterioration of the quality of services or goods delivered which negatively affects the company image and may be reflected in a decline of the consumers' trust. And hence a company struggling for market survival paradoxically loses one of its most precious resources conditioning its existence, namely the clients.

Each process comprising introduction of changes must be preceded with a diagnosis of needs and suitable preparatory measures. At this stage, the key role is played by the managing personnel. Much also depends on the aforementioned organisational culture as well as the organisation size.

However, most such changes related to ecology can be introduced by simple and cheap means. One should definitely make sure whether the equipment the company uses is provided with low energy consumption certificates, e.g. Energy Star. What also matters is that employees are included in the pro-environmental efforts, for instance, by encouraging them to switch off all electrical devices in their closest surrounding once they are not needed, to save water and to sort waste. The enterprise may actively support such initiatives by installing appropriate waste bins or sharing information on the environmental relevance of the actions undertaken by means of leaflets.

Another solution companies may apply while seeking ways to save money involves solar panels installed on large area roofs, e.g. on warehouses. Owing to such screens, one may obtain large volumes of free and environmentally friendly electricity. It is estimated that the return on such an investment, when performed with the EU financial support, is attained after 6 to 8 years<sup>9</sup>.

When an enterprise is in disposal of larger funds to be spent on 'green solutions', they may consider an option of moving to one of environment-friendly office buildings. The available options are fairly extensive in this respect, since more and more real estate development companies operating in Poland decide to construct or redevelop their office buildings, turning them into 'green buildings', as they are commonly referred to. Not only does it follow the contemporary pro-environmental trend, but such ventures also ensure large savings.

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<sup>9</sup> [www.nfosigw.gov.pl](http://www.nfosigw.gov.pl) [2.08.2013].

From the perspective of an office building construction, ecology primarily stands for state-of-the-art technologies and systems enabling optimum utilisation of limited resources at hand as well as reduction of operation and maintenance costs usually generated by large consumption of electric energy and water. Owing to the ergonomics of structure, green office buildings minimise unnecessary losses and the resulting CO<sub>2</sub> emission into the environment. An example of such a solution is the Building Management System (BMS) which enables integration of all building systems. It provides detailed information on media consumption, thus making it possible to optimise the resources. Such a solution brings considerable savings in a longer time horizon.

One should note there are other options as well, just to mention window blinds controlling undesired sunlight reflections in interiors, a system of storm water collection and utilisation on greens surrounding the building or special sanitary devices reducing water consumption by even as much as 50%.

Savings can also be obtained owing to such environmentally friendly solutions as human presence sensors in compartments enabling unnecessary sources of light to be switched off and controlling the operation of air conditioning systems, glazing of large building surfaces aimed to increase natural illumination of interiors, installation of cheaper LED-based lighting as well as the already mentioned solar panels installed on façades or roofs<sup>10</sup>.

The efficiency of the solutions being introduced is evidenced by the studies concerning the Polish real estate market conducted in 2012 by BRE Bank<sup>11</sup>. Buildings compliant with the highest certification levels<sup>12</sup> are capable of ensuring reduction of media related costs by ca. 30% for adapted green buildings and up to 50% for buildings erected in a manner dedicated to obtain a specific 'green grade'. When one decides to procure the lowest level certificates, where it is required to meet the smallest part of requirements, the savings can reach as much as ca. 9%. Reduction of the operation and maintenance costs increases the profitability of the building, and hence accelerates the return on investment as well as the commercialisation process. Lower operation and maintenance costs constitute an important argument when considering higher lease rates, since they are ultimately translated into reduced expenses to be incurred by the tenant. Green buildings are also recognised to have a positive social impact, since ecological awareness is more and more commonly required of the society and of businesses.

<sup>10</sup> M. Zatylny, *Uwarunkowania formalno-prawne budownictwa naturalnego*, United Nations Development Programme, Warszawa 2012.

<sup>11</sup> *Rynek nieruchomości w Polsce. Raport wiosna 2012*, by a workgroup representing the Department of Real Estate Market Appraisals and Analyses, BRE Bank Hipoteczny SA, Warszawa 2012.

<sup>12</sup> **Platinum** according to the US scale of Leadership in Energy and Environmental Design (LEED) or **Outstanding** according to the Building Research Establishment's Environmental Assessment Method (BREEAM).

However, it should be stressed that, besides the pro-environmental solutions, what also matters is the education of persons working in green buildings. Workshops on paper and energy saving opportunities, effective utilisation of office appliances or reducing water consumption are particularly useful when creating even more ecological working environment and striving to build a coherent pro-environmental organisational culture.

Next to the aforementioned measures to seek savings in the ‘green policy’, a company may also consider changes to be introduced in technological processes, wherever it is possible to use environmentally friendly materials. Such materials are indeed more expensive than traditional ones, but they may considerably increase the quality of the products delivered, having a positive impact on the brand image at the same time.

Using natural components minimises the risks of the personnel and consumer health hazard and the environment pollution. Moreover, such products may apply to be granted one of prestigious European certificates, e.g. the Blue Angel or the EU Flower. Such certification triggers an automatic increase of the given product’s market value.

In the pursuit of green image, a company must attach great importance to cohesion in action and not disregard the matter of social trust, for it is gained slowly and gradually, but may be lost very easily. The contemporary consumer awareness is much higher than several years ago, and it still grows. The product price is no longer the only criterion of purchase. Equally important are such aspects as the product composition, origin and manufacturing method conforming with specific standards, entailing human rights and respect towards the environment<sup>13</sup>.

The ongoing development of waste recycling and renewable energy recovery technologies is somewhat forced by global trends in the sphere of environmental protection as well as the European Union regulations becoming increasingly demanding. Good stimuli to undertake various sorts of pro-environmental efforts are also the ecological reports more and more frequently published by companies operating in the Polish market (e.g. Axel Springer Polska, Anwil or Luwena SA) as well as international rankings highlighting the best examples of such activities. In 2012, in collaboration with the companies Trucost and Sustainalytics, the US *Newsweek* magazine developed the Newsweek Green Rankings, being a list of 500 largest American and global firms classified according to their influence on the environmental. The ranking was led by two Brazilian companies (Santander Brasil and Bradesco) and one based in India (Wipro)<sup>14</sup>. There was not a single company from Poland in the ranking which may evidence a low level

<sup>13</sup> J. Nitecki, “Działania ekologiczne firm strategią przyszłości”, *eGospodarka*, August 2010.

<sup>14</sup> “The World’s Greenest Companies 2012. The 2012 Rankings”, *Newsweek*, October 2012.

of ecological awareness of Poles<sup>15</sup> despite a number of initiatives undertaken in this area, but on the other hand, it showed a great potential of the country in this respect, being a clear guideline for potential investors.

### 3. Environmental impact of rail transport compared to road transport

Climate protection is one of major challenges of our times. Therefore, pro-environmental efforts have also become necessary in the transport and forwarding sector. From this perspective, two branches of the transport industry, i.e. road and rail transport, are particularly worth discussing.

Some definite advantages of the road transport include its flexibility and fairly high profitability. However, if one was to compare road and rail transport in light of their environmental impact, the latter would certainly score higher. According to results of surveys conducted in 2011, rail transport compared to road transport performs much better in such spheres as emission of pollutants, noise and land occupancy (Figure 1)<sup>16</sup>.

Railway shipments are growing in importance. The potential of this means of transport is enormous, particularly from the perspective of the European Union regulations on the CO<sub>2</sub> emission reduction. The profitability of rail transport, especially on longer distances, is higher compared to road transport. Furthermore, railway proves particularly useful in combined transport. For instance, when transporting containers, there is no need to reload their content which reduces both the lead time and the shipping costs.

The scale of impact exerted by rail transport on the environment and safety is incomparably smaller than that of road transport. According to the European Commission data of 2010, railway could be accounted for 6.3% of total passenger transport and 10.2% of cargo transport<sup>17</sup>. Due to the current domination of road transport, one of the primary goals assumed for the European Transport Policy was the expansion of alternative transport forms, i.e. rail, water and intermodal. The increase in the share of railways in passenger transport planned by the year 2020 is up to 10%, with the same plans pertaining to cargo transport set at up to

<sup>15</sup> The low ecological awareness of the Polish were also confirmed by results of the survey conducted at the end of the year 2012 by TNS Polska, commissioned by the Ministry of Environment. *Badanie świadomości i zachowań ekologicznych mieszkańców Polski*, raport TNS Polska dla Ministerstwa Środowiska, Warszawa 2012.

<sup>16</sup> F. Tomaszewski, E. Wojciechowska, "Transport kolejowy a ochrona środowiska", *Mechanika* 2011, Book 4/108, 2-M/2011.

<sup>17</sup> *EU Energy and Transport in Figures*, European Commission, Brussels 2012.



15%<sup>18</sup>. For comparison, in the United States, railway transport is the predominant mode of cargo transport (45% of share), but plays a negligible role in passenger transport (only 0.5% of share in the overall transport balance)<sup>19</sup>.

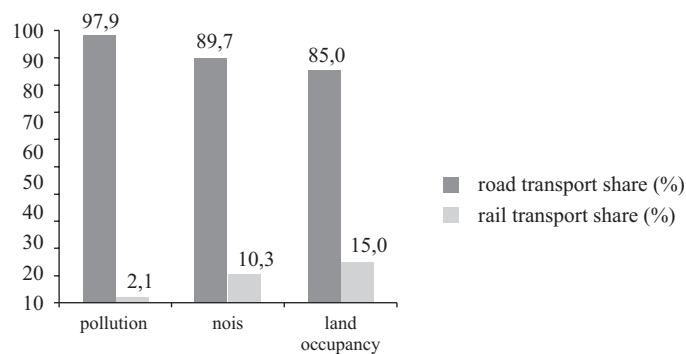


Figure 1. Environmental impact comparison of rail and road transport

Source: author's own study based on: F. Tomaszewski, E. Wojciechowska, "Transport kolejowy a ochrona środowiska", *Mechanika* 2011, Book 4/108, 2-M/2011.

Railway shipping services are also growing in importance in Poland. However, in order for the Polish market to become competitive against the Western European ones, specific enhancements as well as expansion of the existing railway infrastructure are necessary, and these processes take years to complete. Meanwhile, the road transport will retain its dominant role compared to other transport modes, and this entails the necessity to implement pro-environmental programmes in road transport on the concurrent development of railways.

In the pursuit of environmentally friendly solutions, the EU guidelines may become useful. One of the ways to reduce the environmental impact of the transport industry is lowering the permissible exhaust gas emission thresholds. Every successive regulation provides explicit guidelines on decreasing limits of harmful emissions. The Euro 6 standard entered into force on 31<sup>st</sup> December 2012, thus reducing the permissible emission limits for nitrogen oxides (by 80%) and particulate (by 66%). This standard applies to newly manufactured vehicles, however, starting from the end of 2013, it will also cover the newly registered ones.

Due to the latest EU regulations becoming effective, the offering of trucks compliant with the restrictive standards of exhaust gas emission has been extended. As the Euro 6 standard entered into force, the first engines meeting its

<sup>18</sup> Commission of the European Communities, *White Paper: European transport policy for 2010: time to decide*, Brussels, 12.09.2001, COM (2001) 370, final.

<sup>19</sup> *EU Energy and Transport...*, op. cit.

requirements started being designed. In March 2013, Scania presented their latest driving units of 440 and 480 horsepower, intended to be installed in long-distance trucks as well as in vehicles used for other purposes.

For businesses, the choice of more ecological vehicles is also becoming more profitable owing to the differentiation of charges due to the use of road infrastructure, as preferential fees are being introduced for vehicles conforming with more demanding exhaust gas emission standards. For instance, in German motorways, users of trucks meeting the highest standards of exhaust gas emission are obliged to pay the fee of EUR 0.141-0.155 (depending on the number of the road set axles) per each kilometre driven. The fee charged for running the same distance from users of trucks not classified under any of the exhaust gas emission groups amounts to EUR 0.274-0.288. Such a scheme of mandatory charges is assumed to convince carriers of using more advanced and hence more environmentally friendly vehicles. This is how driving a car being a smaller environmental burden becomes cheaper owing to lower charges imposed<sup>20</sup>.

Investing in state-of-the-art propelling technologies is but one of the means to increase the efficiency of transport. A lower level of harmful emissions may well be attained by more effective planning of transport routes, thus improving the entire company performance. Appropriate transport management systems enable integration of clients representing one or several business sectors through accumulation of shipment volumes under a single transport route and applying shared loading space solutions. Such an approach not only enables cost and time saving in relation to optimisation of transport routes, but also leads to considerable reductions in terms of the exhaust gas emission<sup>21</sup>.

#### 4. Conclusions

Entailing environmental matters in business strategies of enterprises is particularly important for their market position. The status of education and awareness of consumers is becoming better and better, enabling them to make decisions not only based on the product price criterion, but also thoroughly analysing the ways and conditions in which the product has been manufactured as well as the given company's relationships with its environment perceived in a broad context. Hence the exclusive orientation on price reduction does not bear any direct effect on the competitive advantage of organisations.

<sup>20</sup> M. Jurczak, "Transport w zgodzie z przyrodą", *Ecomanager* 2011, No. 9(18).

<sup>21</sup> *Ibidem*.

Responsible attitude towards stakeholders, both the internal and the external ones, enables companies to stand out among other market players. Pro-environmental efforts constitute one of the main areas of responsible business making, next to social relationships and operating economy. Implementing environmentally friendly schemes does not necessarily lead to large costs. In the first instance, one may focus on small corrections being introduced to the existing processes on ongoing basis. The management must keep track of their efficiency and enforce their implementation in order to be capable of further changes. An example of such efforts may be the waste recycling, becoming more and more common in companies regardless of the sector they represent, or eco-driving training courses for drivers employed by carriers and forwarding companies. However, the most important aspect of the problem discussed is for organisations to actually understand the *raison d'être* of environmentally friendly programmes and to notice the potential to improve their image but also to attain considerable savings in a longer time horizon.

## Literature

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## Znaczenie zrównoważonego rozwoju – aspekt ekologiczny

**Streszczenie.** Nie sposób w obecnych czasach przecenić roli zrównoważonego rozwoju w kontekście funkcjonowania firm. Konkurowanie wyłącznie niską ceną stało się niewystarczające, by wypracować przewagę konkurencyjną na rynku. Zwiększająca się świadomość konsumentów sprawia, że przy wyborze konkretnego produktu oprócz ceny brane są pod uwagę także sposób i warunki jego powstania, materiały, z których został zrobiony, oraz ogólne relacje firmy z otoczeniem. Niezwykle istotne jest również to, w jaki sposób firma podchodzi do zagadnień związanych ze środowiskiem. Celem artykułu było przybliżenie rozwiązań proekologicznych, w tym również w transporcie, od najłatwiejszych do wdrożenia, niewiążących się z dużymi początkowymi nakładami, aż do projektów generujących koszty w krótkim okresie czasu, lecz długoterminowo przynoszących większe oszczędności. W pracy wykorzystano najnowsze badania i opinie ekspertów.

**Słowa kluczowe:** zrównoważony rozwój, ekologia, ekologiczny transport, ekologiczność