COMMUNICATION SUPPORT INCREASING ENERGY EFFICIENCY IN THE WORLD

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Abstract. The increase of energy consumption in the world has been confirmed by several prognostic studies. This fact leads to specific actions to increase energy efficiency in the world and thereby reduce its consumption. The reason why the energy consumption growths is the development of our civilization and thus increase in demand for energy carriers by both individual as well as collective consumers. The ability to prevent surges in energy consumption is to conduct systematic social campaigns to promote the consumption of energy savings and increasing efficiency. These campaigns are an example of communication to support socially responsible consumption for both businesses and households. The communicating which supports energy efficiency is to draw consumer attention to an apparent problem, its consequences on a global scale as well as the urge to change the style of consumer behavior in the field of energy. The paper pointed out the impact of decisions of consumers and producers on energy consumption. The issues of green marketing are presented and its impact on public education in terms of excessive energy consumption.

Keywords: energy consumption forecasts, social marketing, social communication, consumption of socially responsible, green marketing.

Introduction

The prospect for growth in energy consumption is irrefutable fact. Finding out new ways of reducing increase in energy consumption causes many difficulties. The consumers and the customers are groups of individuals and collectives. The consumers may influence the structure and the shape of their demand. The consumers shape the demand on energy indirectly. Their decisions in the field of goods purchasing and lifestyle determine the structure of production inputs in the production process. The pro-saving campaigns, social and green marketing are key tools in the process of social communication and social marketing thus supporting the reduction of non-renewable energy demand. The purpose of this pro-saving education is to make the consumers aware of the consequences of energy overconsumption. The alternative solutions are proposed and the positive results of such actions are becoming widely known. Aware and well-educated in pro-energy efficiency consumers have enormous power to influence even the most powerful producers. But first of all they influence their closest environment i.e. family, friends and colleges. Finally it results in rational decisions in energy consumption in their own households. Such consumers act in accordance with the idea of socially responsible consumption and require it from others. To spread the idea of socially responsible consumption, this requires a long process of communication to support the increased efficiency of energy use in the world.

1. Analysis of energy consumption predictions in the world to year 2030

Unfortunately, energy resources from one year to another undergo a significant reduction in all countries of the world [14.] and it is through constant efforts to improve the existence or the development of civilization. The reduction touches all non-renewable energy sources such as: coal and lignite, petroleum, natural gas, nuclear energy. The world continues to use renewable energy sources in the little: hydropower, wind, wood, sun, biomass and others. IEO2006 analysis [16.] and WEO2008 [18.] and 2030 specify that fossil fuels will continue to contribute to a significant increase in energy consumption. Oil remains the dominant source of energy during the forecast period, but its share in total world energy consumption will decrease to 33% in 2030, the reason will be ongoing and systematic rise in the oil prices in the world. Looking ahead the consumption of oil will reach 118 million barrels per day in 2030. For the year 2015 the projected consumption will be on the level of 98 million barrels a day. However, in earlier forecasts suggested that the consumption will be 119 million barrels of oil per day (IEO2005) [17., 18.]. It is therefore estimated that by the year 2030 the world will increase consumption of all non-renewable energy sources, both by the countries of the Organization for Economic Cooperation and Development (OECD) as well as the other (Table 1.).

Table 1. Forecasts of energy consumption in the world 2010-2030 (quadrillion Btu - 1Btu = about 1059J)

Region	**2010**	**2015**	**2020**	**2025**	**2030**	**The average annual percentage change**
OECD countries:	**256,1**	**269,9**	**281,6**	**294,5**	**308,8**	**1,0**
North America	131,4	139,9	148,4	157,0	166,2	1,3
Europe	84,4	87,2	88,7	91,3	94,5	0,7
Asia	40,3	42,8	44,4	46,1	48,0	1,0
Non-Member the OECD:	**253,6**	**293,5**	**331,5**	**371,0**	**412,8**	**3,0**
Europe and Eurasia	56,5	62,8	68,7	74,0	79,0	1,8
Asia	126,2	149,4	172,8	197,1	223,6	3,7
Middle East	25,0	28,2	31,2	34,3	37,7	2,4
Africa	17,7	20,5	22,3	24,3	26,8	2,6
Central and South America	28,2	32,5	36,5	41,2	45,7	2,8
World total	**509,7**	**563,4**	**613,0**	**665,4**	**721,6**	**2,0**

Note: Totals may not equal to the amounts of constituents due to independent rounding.
Source: Energy Information Administration/ International Energy Outlook 2006, www.eia.doe.gov/iea/.

The OECD countries are primarily responsible for the increase in energy consumption in the world. These countries undertake actions to respect electricity consumption, to reduce the environmental impact, to replace the existing monopoly in the energy sector by a competitive market and promote the use of renewable energy [5., 6., 11.]. The official task of the European Commission in this regard has therefore become more efficient use of energy. One way to reduce demand for energy is to change consumption patterns of individual and

collective. The increase in energy consumption by non-OECD countries at the moment is three quarters of the growth in total energy use in the world. This fact is confirmed by the analysis IEO2006. But in the year 2030 their total demand for energy will reach 34% of total energy use in the world. From the position of the whole world energy economy the data are worrisome, however, the reason for such a growth by WEO2008 can be not only the development of these countries, but also the demographic conditions. The reason may also be that in the globalized economy and the differences in market regulation it is observed the phenomenon of transfer of energy consumption from one country to another (e.g., the trade deficit in U.S. trade with China). This is due to limitations in the production of goods intensive in its manufacture, it is replaced by imports from countries with lower labor cost and lower the unit price of energy (mass import of products manufactured in China, Malaysia, Singapore and Taiwan). It is therefore not fully justified in making a criticism of these countries due to undercutting environmental standards and excessive load on the environment.

2. Social communication promoting consumption socially responsible

The idea of socially responsible consumption requires from collective consumers (companies) and individuals (households) compliance with certain economic and effective rules. As is outcomes from the presented forecasts for the early twenty-first century the steadily increasing energy consumption is observed in world. The corporate social responsibility requires from all consumers and businesses ethical behavior. It requires doing things, which would better serve society. The actions which aggravate the situation must be avoided [7.]. The priority activities of enterprises is therefore no longer only to maximize profits, but also to find solutions that are socially responsible, environmentally friendly and economically valuable at the same time [22.].

A desired effect of reducing energy consumption may relate to social campaigns whose primary purpose is to encourage the reduction of waste and reduce unnecessary energy consumption by using a wide range of tools and methods of the social communication. For example it is possible to promote replacing traditional light bulbs by compact electrical devices, to turn off the option "standby" in most home devices. It is clear that these treatments can only partially stop the increasing demand of individual consumers for energy. Although it is determined that lighting is one of those areas where everyone can effectively help reducing energy consumption. Lighting technologies, which are energy efficient, allow to save up to the 80% of the energy consumption. Replacement of only 1 traditional fluorescent energy efficient light bulbs can save per year over 26 PLN (9 USD) and reduce CO_2 emissions by 62 kg. By replacing bulbs in all 13 million Polish households (an average of 5 points of light) would give savings of 4 TWh, more than 3.5% of annual domestic consumption of electricity net [12.]. The compensation for the higher prices of energy saving lamps is their longer life (up to 8 years) and greater efficiency, since it is estimated that energy consumption is reduced 5-fold [12.].

Institutions, enterprises, organizations and authorities of the country support the idea of socially responsible consumption behavior and the promotion of rational and efficient use of energy. To this action joined also Polish government. It prepared social campaigns: "The time to save energy." The campaign aims to inform the Polish society of the benefits arising from the use of modern energy efficiency and to promote good and effective practices in this field. The Government expects that these actions will help improve energy efficiency will help the Polish economy and environmental protection [12.].

The example of a social communications to reduce energy consumption are also all kinds of information campaigns. Such actions support the companies too. The aim of a such campaign is to promote following idea: "Opportunities arising from energy efficiency." One such

campaign was addressed to two audiences: the individual customers and businesses. The aim of the campaign addressed to individual consumers is to inform potential consumers of the tangible savings resulting from the purchase and use products that have demonstrated higher rates of energy efficiency. These products include: building material (bricks, mortar, isolation materials, windows, doors) or household devices which posses higher energy efficiency class certificates. The message is based on estimates of increased costs to maintain the property and household resulting from the increase in energy prices caused by the shrinkage of the world's liquid fuels. This forces the property owners to seek energy-efficient building solutions (e.g., thermal upgrading) or supplies. Thus, having knowledge of the owners of the tangible benefits from the use of more energy-efficient products help to curb the pace of decline of the world's liquid fuels. The second part of the shares presents a new model of partnership for trade companies of the construction industry under the banner of "partnership for energy efficiency." The main aim of the campaign is to educate companies on energy efficiency of their employees, who then will be able to share this knowledge with private property owners and professionals from the construction industry. The company succeeded because the demand for advice was very large and had an increasing trend. At each meeting the owners have received training in regulatory and technical aspects of energy efficiency and possible modernization to use in their properties [9.].

A lot of companies are implement social responsibility programs(SRP) under the influence of social campaigns to reduce energy consumption. The Energy Regulatory Office in October 2007 launched a campaign program of long-term awareness for energy efficiency. In the program several tools of internal and external social marketing were used. The tools were focused on closer and further environment of the company. As external part of the communication activities, "a website with provided on-line guides promoting energy efficiency for households and businesses was launched; in the customer service centers measures have been taken to launch an advertising campaign in the district offices, newspapers, television and on the trams and in the outdoor type." As part of the company's internal communications "the action towards workers to change their habits for more pro-effective were made" On the technical field the installation of time switches, replacement light bulbs for energy-efficient, reducing the amount of extracurricular light points was proposed". The company estimated that the changes in the functioning of only one building of the company during the year contributed to a decline in energy consumption by over 20% [22.].

The examples of a company engaging in social campaigns is one of the 5 largest European energy companies, RWE, which joined the campaign "Conscious of RWE Energy." It promotes, inter alia, slogan: "TV set in the standby mode = 20% of energy missed." For the purpose of the campaign there ware prepared, in a professional way, easy to read guides: for home and for business, which represent different ways of saving energy both for individuals and collective. These guides are available on the website and in the Customer Service Centres RWE [20.].

The causes of environmental actions may have different background. Some companies take this action because of the desire to erase the negative impression caused by an earlier disclosure of facts about the moves that threatened the environment, other companies gradually build on the basis of the image of a socially responsible company in the field of environmental protection.

3. Role of the private and business consumers in reducing energy consumption

The consumers may express a different pro-energy-efficient activity. This may be caused by environmental factors, cultural, education level or age. The research shows that among the

supporters of environmentally friendly behavior lead the young, who naturally seek knowledge about products, their quality, and acquire any information about the market from multiple sources [1.]. This activity affects the higher consumer awareness of the choices and thus they behave more rationally. The task of the communication is to find the right tools to properly (related to the intended effect) reach the separate groups of recipients (separate if only because of age) for preparing the pro-energy-saving messages. Rising prices of raw materials (oil, coal, gas) do not translate into consumption, as demand for energy is dependent on the size of the expected changes in demand for products, which are generated by business - energy consumers. With regard to individual customers or households one can observe steady trend of increasing energy consumption. In the household appear more and more appliances which causes increase in the consumption of electricity despite the fact that household appliances become more energy efficient.
Pro-energy-efficient consumer activity may also affect companies' decisions. The companies must also be aware that a component of their success in the market also becomes the action to be pro-efficient. The active and conscious consumers may [13.]:

- avoid the purchase of certain products by a decrease in demand and thus reduce their production,
- choose some products and increasing their impact on production,
- avoid products of the organizations whose behavior or actions do not accept,
- choose the brand that they feel meet the highest standards of safety, ecology, energy efficiency and ethics,
- finally create the image of companies using the communication channels (public media), through discussions with the company in a positive and negative dimensions (e.g., claims, complaints).

The consumers make their purchasing decisions looking for information about the brand, product and service. They seek this information in many sources. One of them it might be the exchange of information in the online forums (according to company Gemius 82% of Internet users exchange their views on the purchased commodity, and 67% look for this information prior to purchase) [15.]. Such behavior can also have a significant impact on energy consumption patterns. In this perspective, the behavior of the pro-energy impact "Prosumers" or active consumers with a broad knowledge of favorite products, including energy. The “Prosumers transfer their knowledge to others [15.]. These individuals may promote behavior that increase energy efficiency by a tendency to pay greater amounts for example, energy-efficient products. This phenomenon is described in the literature as - "Willingness to pay (WTP) [25., 28.]. In some countries (Switzerland, Italy, United Kingdom) studies are conducted to assess the readiness of consumers to pay for energy-saving measures for residential buildings [27.]. The analyses based on these studies demonstrate that the impact on WTP have information campaigns. However, prosumers activity affects the behavior of a wide range of passive consumers or businesses.
The aim of the social communication is to get customers believe that the product is energy efficient, though sometimes more expensive to buy. The product is desirable because it brings tangible financial benefits - cost savings during the operation (e.g., reducing the cost of heating the building through the exchange of energy-efficient windows, etc.). Energy efficiency has to speak to consumers' awareness through the concept of energy absorptivity. The energy absorptivity should be understood as "the amount of energy used to operate the building during the year. In this case it does not matter if the energy comes from outside of the building (solar, operated equipment, people)." [4.]. A measure of energy consumption in buildings is a seasonal demand for energy needed to vaporize the surface of $1m^2$ or $1m^3$ volume (the indicator of demand in terms of heat E kWh/m^2/year or kWh/m^3/year) [4.]. The

energy intensity and energy efficiency becomes an important criterion for many consumers in making choices and assessing the quality of products. The consumers therefore have a strong marketing tool, which influences the success of companies and organizations. Usually people (the original facilitators, prosuments) for which the pro-saving measures are important, they share their views with the immediate environment (this is an example of word of mouth). Thanks to such behavior, the range of persons interested in this issue increases. It is therefore important to communicate well with primary mediators in a conscious and efficient way.

4. Green marketing in use to reduce the energy resources consumption

The pro-saving green marketing activities have become a new trend for companies that want to be perceived as modern and professional. These companies use for their technologies, renewable energy sources like solar, wind, hydro and geothermal, some of them also are seeking applications for rainwater. These practices effectively limit the consumption of coal and petroleum and reduce emissions of harmful gases [29.]. Many companies are promoting the idea of green marketing. As examples one can point Norwegian companies, which deal with renewable energy sources. They are specialized in wind energy and small wind turbines and offer hydro-heating systems designed for small business and residential customers [19.].
Green marketing practices to reduce energy consumption require from companies to include:

- comprehensive assessment of current business activities in the field of energy-efficiency,
- preparations for the pro-efficiency policy with precision and clearly defined objectives and program of action,
- full range of training providers and training pro-energy-efficient workers,
- investing in new technologies supported by the pro-energy research,
- development of a sales campaign based on a value-added products,
- development of promotional and sales strategies based on the award through energy efficient products.

The priority for businesses is not only the orientation focusing on profits and customers, but also on ecology. Than one can make a statement that the companies use the so-called. green marketing, which through conservation of ecological organization creates a brand image and raise customer confidence and interest in the present and in the future [13.]. The essence of green marketing is the interdependence of production with the respect for the environment. The fundamental idea of green marketing is a genuine commitment to the societies in the rational use of natural resources including non-renewable energy resources. The green marketing is derived from social marketing, whose primary objective is to promote responsible and desirable attitudes to the promotion of wider social responsibility of consumers and businesses [2., 23.]. The consequence of interest in green marketing activities aimed at the development of new cleaner technologies, promotion of reusable, recyclable or biodegradable, increasing the frequency of emission control and rational use of non-renewable energy [10.]. It is determined that one of the green marketing activities to promote products that are “production, consumption and industrial use that does not result in excessive energy consumption” [13.].
The reducing of energy consumption can be achieved through increased efficiency, through modern technology like the DSM or SMART GRIDS [26.]. Smart Grids it is the use of smart electricity grids. The Intelligent Networks include monitoring systems that keep track of all electrical devices plugged into the system. They include the use and integration of alternative energy sources such as solar or wind energy. In addition, they control the energy

consumption and congestion. When the power supply is the cheapest smart grids can incorporate selected household appliances such as: washing machines, dishwashers, or industrial equipment in factories. However, during rush hours you they can disable some of the devices in order to reduce demand [8.].
The OECD countries pay close attention to two types of pro-saving innovation. These include technological innovation and organizational innovation. Technological innovations relate to the production cycle, i.e. production of goods and commissioning of production processes, which take into account: sustainability, life cycle, reducing the consumption of non-renewable resources and natural, waste, increase safety for users and extend the life time of objects. Organizational innovation process management company focused on: the control of energy consumption in company reorganization jobs, improving workers' safety awareness pro-green energy efficient and generally among the workers. Although on such an approach only the global companies can afford, but it should also encourage small and medium-sized companies to adopt energy-saving pro-orientation [13.].
Companies, businesses and organizations that disseminate information on their environmental activities such as: promoting recycling, waste segregation, the introduction of energy efficient technologies, creating an environment that protects staff work not only support reduction socially undesirable behaviors but also get positive externalities. These include among others: improving the image, propitiation of sympathy and loyalty, increase the prestige and the level of acceptance for interventions. In the focus of green marketing there are therefore a pro-saving technologies, which are increasingly gaining acceptance and reinforce a positive image in the eyes of the consumer organization, becoming a positive element in the competitiveness of the market and thus its market power [3.].

Conclusion

1. On the energy market it is observed a constant upward trend in energy consumption, this condition translates into an alarming long-term forecasts.
2. New methods of increasing energy efficiency.
3. The alternative energy sources and methods that contribute to the reduction in energy consumption among individuals and groups are searched.
4. It is proposed to promote the idea of socially responsible consumption.
5. It is proposed to use the tools of social communication in order to get acceptance of the idea of socially responsible consumption.
6. It is specified that the companies that put into green technologies and organizational innovations not only help reduce consumption of non-renewable energy resources but also increase the value of competitive firms in the market.
7. It is reasonable to believe that the pro-energy saving campaigns and energy-efficient green marketing activities will contribute to positive changes in consumers' behavior individually and collectively to reduce the demand for non-renewable energies.

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