B2B and B2C marketing of energy-saving products, technologies and programs

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Abstract. The article deals with the problem of increasing the effectiveness of the introduction of energy-saving technologies and energy-efficient development of the Russian economy. The analysis of failures introduction to the B2B and B2C markets energy-saving technologies, products, programs and low interest of participants testifies to underestimation of marketing tools. The purpose of the study is to substantiate the need to use a marketing approach to the development and implementation of energy-saving programs, products and technologies in the B2B and B2C markets. The methodological basis of the research is the methods of logical, statistical, comparative, expert analysis, marketing research. The information base was made by normative legal acts, state programs in the field of energy efficiency, analytical materials, expert assessments. Research results: the necessity of marketing support of energy efficiency projects in the four-level system “state–region–companies–population” is substantiated; the features and key elements of the marketing model of energy-saving technologies, products, programs are highlighted; formulas for assessing the attractiveness and identifying stimulating factors at four levels are proposed, taking into account the classical approaches to assessing the effectiveness of investment projects. Practical value lies in the possibility of using recommendations in promoting and evaluating the attractiveness of energy-saving products, technologies and programs.

Key words: energy saving project layout, energy saving programs, energy saving products, energy saving technologies, energy saving project efficiency.

1 Introduction
Over the past ten years, Russia has implemented a number of activities to reduce the energy intensity of the national economy: the introduction of mandatory labelling to classes of energy efficiency of consumer products; government funding manufacturers of LEDs; Energy Ministry organized energy saving festival (about 80 participating regions) and leads the ranking of regions by ten criteria of efficiency of the budgetary sphere, housing and communal services; training of teachers and teach classes in efficiency and respect for the energy in schools; individual thermal points with weather regulation are installed (however, the process is mass-produced only in St. Petersburg and Kazan); since 2018, energy-efficient equipment is used in the reconstruction of old buildings and the construction of new ones, and other measures. Among the planned activities are the installation of 22 million smart meters by Rosseti as part of the digitalization program; the creation of a rating of Russian industrial enterprises carrying out activities in the field of energy conservation and energy efficiency, etc.

However, the efforts have not led to the achievement of the main goal, as confirmed by official sources and research scientists. Our study allowed to establish the absence of a systematic approach to the organization of work on B2C markets in the metering and energy-saving equipment in homes and...
to encourage sales of energy efficient household appliances, to conduct explanatory work among the population and, consequently, weak consumer awareness of the advantages of similar products that differ significantly from traditional. The situation is similar in B2B markets: experts point to the lack of interaction between the state, producers and consumers [1-7].

1.1 Literature review
The study showed an ever-growing interest on the part of scientists and practitioners to the problem of energy saving in general, and to the marketing of energy-saving products and technologies in particular. The focus of the specialists attention is on foreign practice of energy efficiency development [3, 8-11]; specifics of energy saving in industries and spheres of activity [2, 4, 6]; approaches to assessing the efficiency of energy saving [7]. At the same time, we must state the insufficient amount of research in the field of marketing of energy-saving products and technologies, marketing support of energy efficiency projects. We consider it necessary to discuss and research in this direction.

2 Results and discussions
In our opinion, the effectiveness of the implementation of energy saving programs in various markets is constrained, in particular, by the lack of a marketing approach, which involves the development of a set of measures implemented in the system "state–region–companies–population". Potential participants in the implementation of energy-saving technologies, focused on commercial benefits, are not always informed about the merits of the project, can’t assess all the risks, side effects and consequences of the introduction of innovative technologies. In this case, the marketing support of the project should ensure an increase in the attractiveness of the project at all levels and for all participants: from government and financial institutions to the end user. At the same time, in some cases, marketing is able to eliminate contradictions between the interests of different actors involved in the project.

The authors propose a model that gives a holistic view of the main elements and links between them, which should be taken into account in the process of marketing energy efficiency programs, promotion of energy-saving products and technologies. Key differences of the proposed model from the existing ones:
- multilevel – the presence of four levels (national, regional, organizations, population), each of which justified the goals, objectives, functions, principles of marketing energy saving programs, promotion of energy-saving products and technologies;
- consistency – its own marketing mix is developed and implemented for each level;
- complexity – selection of adequate tools for marketing energy saving programs, promotion of energy-saving products and technologies, taking into account the influence of a combination of external and internal factors;
- strategic orientation – orientation in marketing energy saving programs to the strategic goals of the country, region, organization and population.

The main elements of the proposed marketing model are:
- goals, objectives, functions, system of principles of marketing of energy-saving programs, products and technologies at four levels;
- programs to promote energy-saving products and technologies on B2B and B2C markets;
- changing list of energy-saving products, technologies for B2B and B2C markets and their key characteristics;
- a set of traditional offline marketing channels (for example, retail networks, agency / partner networks, personal sales) and online channels (website, SMM, mobile applications, etc.), each of which is a place of sales, service and communications (with detailed communication technologies of trading companies, mayors and prefectures, management companies, homeowners association with end consumers). In terms of marketing communications in the B2B and B2C markets, a Comprehensive plan of measures to improve the energy efficiency of the Russian Federation economy is taken as a basis (approved by the order of the Government of the Russian Federation N 703-p, April 19, 2018) [5];
- a system of indicators of socio-economic efficiency and related synergistic effects at each level of the system "state-region-companies-population»;
- formulas to assess the attractiveness of the energy saving project/product/technology and identify incentives for different participants.

We illustrate these arguments by the example of energy saving projects in the municipal sector. For professional participants of this market, energy saving can lead to a decrease in revenue from services to the population and other consumers, and the population with metering devices is interested in reducing consumption, but must spend investments to obtain deferred revenue. In this regard, marketing, realizing the information function, will ensure the introduction of innovations and sales of energy-saving equipment and technologies, only if the economic benefit or investment attractiveness of such projects for all participants will be obvious. The traditional approach to the assessment of innovative and investment projects based on the calculation of economic efficiency in this case can be used to make a decision on the feasibility of introducing energy-saving technologies both in the B2B markets and in the markets of goods and services for the end user.

Note that depending on the kind of energy-saving technology, the project participants and the level at which the project is implemented, should be designed not only economic (commercial), but also social, fiscal, environmental efficiency energy-saving product or project.

Using economic benefit as a generalizing criterion, within the framework of the proposed model of modeling for each level, an individual assessment of the attractiveness of the project and the identification of stimulating factors for different project participants is carried out.

Consider the order of calculation for each of the four levels.

For end consumers (population), the incentive model in general can be presented as follows:

\[
SCE(x) = P(x) + I_a - \Delta E, \tag{1}
\]

\(SCE(x)\) – is a stimulating component for the end user (population);
\(P(x)\) – is the cost of consumed services or products;
\(I_a\) – is additional investments for the purchase of energy-saving equipment and current costs associated with the maintenance of innovative technology;
\(\Delta E\) – is saving of the consumer at introduction of energy saving technologies.

It is important to emphasize the need for additional consideration of the side effects associated with the transition to new tariffs or savings in operating costs. For example, when installing metering systems of consumed municipal resources or introducing energy-saving equipment that reduces consumption, certain categories of the population that have benefits or receive subsidies from the state may lose this privilege, which can be considered as reducing the benefits and attractiveness of innovation for the consumer.

At the level of stimulation of the manufacturing company (operating organization, management company, etc.) to estimate the increase in profits in the implementation of energy saving projects or the implementation of innovative products in the markets of B2B and B2C, the formula may be used:

\[
SC(x) = PI(x) - C(x) - I, \tag{2}
\]

\(SC(x)\) – stimulating component for the enterprise participating in the implementation of the energy saving project;
\(PI(x)\) – potential income (revenue) of the enterprise in the implementation of energy-saving technologies and production of innovative products;
\(C(x)\) – costs (cost price) for the production or implementation of energy-saving technologies and products;
\(I\) – investments required for the development and implementation of energy-saving technologies (with a long payback period, cash flows are calculated by year, taking into account discounting).

At the regional level, the economic and budgetary attractiveness of energy saving projects is estimated by the growth of the gross regional product, as well as the social and environmental consequences of the projects are proposed to be calculated by the formula:

\[
Ef(x) = GRP(x) - I_b + R_b, \tag{3}
\]
Ef (x) – stimulating component for the region in the implementation of energy saving projects and the implementation of products and technologies in the B2B and B2C markets;

GRP (x) – growth of gross regional product in the implementation of energy-saving technologies and the production of innovative products by business structures of the region;

Ib – investment budget support (co-financing) of projects of development and implementation of energy-saving technologies;

Rb – revenues of local budgets in the form of additional tax revenues from enterprises and business entities, with an increase in the volume of products and services of an energy-saving nature, as well as tax on personal income, etc.

At the state level, the efficiency of energy saving is assessed comprehensively and is manifested not only in increasing economic indicators (increase in gross domestic product, increase in output per capita, etc.), increasing tax revenues, but also emerging manifestations of synergy in the interaction of various industries and spheres of activity, in the form of social (improving the quality of life of the population, employment, educational, cultural level), environmental, image and other consequences. The calculation is made similarly to the regional effect, and in addition budget savings can be taken into account to support inefficient industries and industries, updating outdated equipment in life-supporting areas, eliminating structural imbalances in sectoral and territorial development, reducing the cost of maintaining municipal property, etc.

3 Conclusions
The conducted research allowed stating the underestimation of marketing tools in solving the problem of energy efficiency, which is confirmed by the lack of a systematic approach to the promotion of energy-saving products and technologies, marketing research of demand, insufficient number of scientific and methodological developments in marketing energy efficiency projects.

The author's approach to the formation and promotion of energy-saving programs, products and technologies on the B2B and B2C markets involves the assessment of their attractiveness and stimulation of the consumer (population); enterprises creating innovative technologies and products; as well as to assess the economic, budgetary, social, environmental, image effects for the regions and the state as a whole.

The implementation of the proposed integrated marketing approach will increase the activity of subjects of B2B and B2C markets involved in the implementation of energy saving projects, in the development of energy-saving products and technologies.

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