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Behavioral Aspects of Energy and Heat Consumption (Basing on Opinion Poll Data)

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Abstract

The article considers home heating and energy saving. The authors analyze the energy saving problem in reliance upon the findings of the pilot opinion poll conducted in Orel in autumn 2013. The objective of the poll was to identify the home heating needs of local residents and to find out the viewpoints of the residents in respect of the operation of local public amenities. The authors explore the reasons for the inefficient operation of the Russian heating supply system with account for the poll findings and secondary data. The authors believe that the traditional behavioral model, that does not contemplate any need to save energy, is one of the reasons why the heating of residential homes are heated inefficiently. The authors offer their solutions and top-priority actions to be taken.

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Keywords: energy consumption, heat consumption, energy saving, sustainable development, green building, behavior pattern.

1. Introduction

In 2008, the RF Government Resolution issued on July 11, 2001 “On the Reformation of the Energy Sector of the Russian Federation” ceased to be in force and effect [1]. The goal of the recent reform was “to ensure the sustainable operation and development of the economy and the social welfare system, to improve the efficiency of electric energy generation and consumption, and to provide for the reliable and continuous electric power supply”

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[2]. The strategic objectives of the reform were (1) to ensure the sustainable development of the electric energy industry on the basis of new technologies and market laws, (2) to ensure the reliable and cost effective satisfaction of the solvent demand for electric and thermal energy in the short and long terms. However all objectives remain unattained, as no enterprises have improved their efficiency, no competition has been triggered among the energy generating companies and retailers, electric power rates for end users have reached and even surpassed the international level, and as a result, some Russian industries have to fight for survival [2].

In 2010, the Russian Federation launched the Energy Saving and Efficiency Improvement Program for the Period through 2020. The mission of the program consists in the rational consumption of fuel and energy resources through the implementation of energy saving actions, energy efficiency improvement in various industries and RF subjects, and reduction of the energy capacity of the gross domestic product [3].

However, according to the analytical reports, high energy consumption and substantial energy losses are the reason for excessive operating expenses and uncomfortable living environments [4]. Assimilation of advanced technologies and modification of the heating energy supply pattern may solve the problem [5].

Russian and foreign researchers are engaged in the implementation of numerous research projects on advanced power saving technologies and optimal electric/heat energy market models [6-9]. The majority of recent research projects are multinational. Multinational teams of specialists work together to share their expertise and to apply their knowledge in various countries [10-12]. Some papers cover the heat consumption by specific types of buildings or private residences [13-14]. The researchers also analyze the role of the state and its citizens in the improvement of the energy efficiency of buildings and structures [15].

2. Research Objectives

The current official methodologies for environmental-economic damage evaluation in Russia are complicated in general and not that easy to use. In case of the market economy in order to make such evaluation more simple and clear the market methods should be used instead. This should improve the efficiency of the land management.

We will not analyze any technological, technical, and economic difficulties that accompany the program implementation, but we will drive your attention to the social aspects of the problem, in particular, to the national behavior models and energy consumption patterns. Equipment and technologies may be employed after their use has turned into a regular behavioral pattern.

The heat supply process can be presented as a scheme that has the power generator, heat transportation facilities and power consumers. Each constituent of the heat supply process pursues the individual goals: the power generator is willing to make profits, and it means more energy supplied at higher rates, while the power consumer wants to get the best quality heat at the lowest possible price.

As a result of boosted rates and disparate quality, social strain appears, the number of non-payers increases, preventing investment inflows into the upgrade and repair of the fixed assets.

The balance of interests is a must to ensure the efficient heating system operation. The most efficient way to find out the concerns of consumers is to ask particular questions, so that suppliers could compile their offers with account for the consumers' concerns. This is the way the system operates in Europe. The consideration of the consumers' concerns underlies the relationship between the state, the business community, the society and its citizens.

Our research project should not be regarded as an applied one, as it cannot solve any heat saving problems "right here and right now." Rather, it is a theoretical and methodological research, as it will serve as the basis for the methodological approach to another research into the heating needs of residents and the tool designated for the monitoring of the quality of heating services.

3. Methods

We employed opinion polls (or questionnaires), in-depth interviews, focus groups, observations, and experiments as the principal data collection methods. R. Blackwell's book on ethnic micro-cultures and their impact on the consumer behavior serves as the basis for our research, because the consumer behavior is a factor of utmost