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Currently we live in a constantly changing global environment which is described by a multitude of complex relationships among various economic agents (government, businesses, population). Tough competition, transformation of resource structure, economic fluctuations put forward issues that have to be addressed by companies in order to be able to survive and drive towards further successes. For responding economic challenges businesses are required to pay serious attention to their strategies, as the latters define the path they should follow. Managers realize the last point and therefore stress the importance of increasing strategic management efficiency and seek for tools that would make possible to achieve that. In this respect, among distinct strategic management mechanisms and techniques a special interest both in practical and scientific points of view represents the framework developed by Kaplan and Norton\textsuperscript{18} which is called Balanced Scorecard (hereafter BSC).

Efficiency of strategy management is not an issue important only for private organizations. Public organizations and governments pay attention to this certain topic as well. Particularly, government implements techniques of strategic management for various economic sectors. In this sense, energy sector is of certain interest. It is considered as one of the most crucial driving factors of economy which has both direct and indirect impact on the overall economic success. Therefore, effective strategy is necessary for this sector and BSC approach can be applied as well. However, it should be mentioned that literature on BSC applications for energy sector and energy companies is relatively scarce\textsuperscript{19-21}.

Armenian energy sector is not an exclusion. In Armenia energy sector has even more significance. The reason behind that is the fact that this country doesn’t have own natural energy resources (oil, natural gas, coal) and whole domestic demand is satisfied by means of imports from Russia and Iran. This emphasized dependence on external sources highlights a necessity for Armenia to develop a well-structured strategy for energy sector and utilize various tools for its management. In this respect, a particular solution could be the implementation of BSC. Such an attempt is made in current paper. This study aims at developing a BSC framework for Armenian energy sector and indicating possible measures and topics that could be undertaken or analysed further.

The Concept of Balanced Scorecard. Originally proposed as a performance measurement system, during the past decades BSC has undergone conceptual and functional transformations and currently is considered as a commonly used mechanism for strategy management and control. Development of BSC was conditioned by strong inefficiencies and drawbacks of traditional performance measurement systems that were mostly concentrated on financial indicators and financial aspects of corporate performance. Such an accentuated focus on financial measures provided information only about past periods and short run developments, while information concerning long-run perspective was impossible to be taken into account. This kind of performance measurement systems which were highly efficient during industrial era became ineffective in information age where the primary role had gone from material resources to intangible ones (information, knowledge, human capital)\(^\text{22}\). Therefore, there was an urged necessity to develop a measurement system that would allow to review the performance more effectively\(^\text{23} \ 24\).

\(^{20}\text{Rodprasert R., Chandarasupsang T., Chakpitak N. & Yupain P. P.} \ 3D \text{Energy Framework Strategy by Balanced Scorecard} // \text{Life Science Journal}. - 2014. - \text{Vol. 11, No. 2}. - \text{P. 209-220}.
\(^{21}\text{Nortjé C., Middelberg S.L., Oberholzer M. & Buys P.W.} \text{Developing a sustainable balanced scorecard for the oil and gas sector} // \text{Environmental Economics}. - 2014. - \text{Vol. 5, No. 4}. - \text{P. 52-60}.
BSC represents a unique tool which supplements financial indicators with non-financial indicators\textsuperscript{25}. The term balanced refers to the balance that BSC secures between financial and non-financial indicators, internal and external indicators, strategic and diagnostic indicators, short-run and long indicators, leading and lagging indicators. It enables to monitor corporate performance from four different perspectives – financial, customer relations, internal business processes and learning and growth.

\textit{Financial perspective} consists of indicators that reflect final results of undertaken actions. The main objective of this perspective is increased shareholder value which is suggested to be achieved either by improving productivity or revenue growth. \textit{Customer relation perspective} concerns the consumer base and market segment where the company is engaged. It aims at increasing customer value proposition and improving customer satisfaction by offering better price, quality and speed of delivery. \textit{Internal business process perspective} is related to those key processes and actions that result in improved customer satisfaction and corporate profitability. This perspective is concentrated on the management of operational, innovation, customer relations and social processes. And finally, \textit{Learning and growth perspective} defines conditions necessary for sustainable long-run growth. It focuses on human capital, information capital and organization capital\textsuperscript{26}.

BSC is based on strategy. Vision, values and strategy are put in the centre of the system. This particular point outlines the strong relationship between strategy and BSC. For each perspective of BSC respective strategic objectives are defined. In order to highlight the path of achieving those objectives, strategic initiatives are proposed. For each initiative certain indicator (or indicators) are suggested and target values are set. The following figure represents the concept of BSC and its relation to strategy (Fig. 1)\textsuperscript{27}.

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The key principle which BSC is based on, assumes cause-effect linkages between proposed measures and objectives. According to Kaplan and Norton\textsuperscript{28, 29}, strategy is described as a chain of cause-effect relationships which can be introduced with the help of if then statements.

**Characteristics of Armenian Energy Sector.** The Republic of Armenia represents a developing country which tries to build a market economy. Armenian economy is still in the process of transition as it gained its independence only 25 years ago - after the collapse of Soviet Union. 70 years of planned economy left their serious footprint in the economic profile of Armenia and during the whole period of ongoing transition process created enormous obstacles for market economy development. Transition period made Armenia to face with a plenitude of problems concerning the development of own understanding of national economy and its growth. Country suffered and still suffers with serious issues in all sectors of economy. The energy sector is not an exclusion.

This particular area has a crucial importance for Armenia. As it is mentioned above, country does not possess natural energy sources such as oil, natural gas or coal. Therefore, that lack of natural resources makes Armenia dependent on Russia and Iran (mostly Russia), as they are the main importers of oil and gas. That is why, Armenia also has serious

problems concerning energy security and independence. Stability of energy sector, in particular, power supply, directly depends on the volume and price of imported energy resources, as the production of electricity in thermal plants, which supply 36% of total power\(^{30}\), is based on natural gas. Consequently, economic development of Armenia also depends on the stability of energy sector.

Besides the problems related to the absence of natural energy sources, there are also drawbacks in operation and management of energy system. Old technologies, low level of staff competence cause tremendous losses in distribution networks, which in their turn lead to serious financial losses for distributor company and put an upward pressure on electricity price. For instance, during the recent years, electricity price for Armenian population has increased nearly by 50% due to poor management of energy production and supply. This has serious social impact on population, as well.

It is believed, that the development of energy sector’s BSC will contribute in solving management related problems, as it represents effective management tool.

**The Balanced Scorecard for Armenian Energy Sector.** As the central part of any BSC is constituted by mission, vision, values and strategy, their definition represents the first step in the process of BSC development. Mission and vision of energy sector set final desired destination and starting point of strategic process. By taking into consideration features of this sector, relations between its agents and necessity to improve conditions of those agents, the following mission statement is suggested: “To maximize welfare of economic agents (stakeholders) engaged in energy sector”. Vision of energy sector assumes provision of sustainable and renewable sources’ based energy. And finally, values of sector reflect increase of power generation productivity, reduction of production costs, enhancement of competitiveness in the international market, continuity of energy supply, amendment of environmental profile of energy sector.

In this study BSC for Armenian energy sector is developed on the basis of certain transformations and modifications of traditional framework proposed by Kaplan and Norton. The logic behind that is to make the

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concept adjusted and adapted to the realities and specifics of this particular sector and interrelations between agents representing it. The principal modification concerns financial perspective. As the scorecard is considered for the whole sector, it aims at achieving maximal welfare for all agents – government, consumers and producers. Therefore, it is decided to label it as welfare perspective. Moreover, as customer welfare and producer welfare are core parts of total welfare, customer perspective and financial perspective of producers or producer perspective are assumed to be sub-perspectives of welfare perspective. Labels of the remaining two perspectives – internal business process perspective and learning and growth perspective – remain unchanged.

As it is mentioned in the previous paragraph, total welfare consists of government welfare, customer welfare and producer welfare. Each of these components assumes own strategic objectives. For the government increase in the volume of taxes paid by energy companies is considered as first objective, as taxes constitute income that government earns from this sector. In order to quantify outcomes of that strategic goal, the ratio of energy taxes to total taxes is selected. The second objective pursued by the government is related to foreign trade and takes into consideration net export of energy sources. As the latter represents another source of income for the government, respective objective should be to increase the energy net export measured by total volume of energy net export in monetary terms.

Producer sub-perspective covers financial performance and financial measures of producers. Logically, the main goal of producers is the increase in profitability and improvement of respective financial indicators. As it has already been mentioned in this study, basically there are two strategies of profitability increase – revenue growth and productivity improvement. In case of energy sector the first strategy assumes revenue growth from existing customers, as there is a fixed customer base and standard product. In other words, companies can’t increase their sales by introducing other products. Thus, energy companies can improve their profitability either by increasing sales to their existing customers or improving productivity. This implies increase of energy demand and consequently reduction of price, because in case of price increase, customers will take actions in order to reduce energy consumption.

The last topic is related to customer welfare and addressed in the customer sub-perspective. As customers, sectors of economy (including
residential sector) are assumed. From the perspective of the whole energy system, the main objective of customer component should be the decrease of energy unit cost (energy price) not the total cost. The logic behind that is the fact that reduction of total energy costs borne by customers means similar change in producers’ revenue. A possible action that has to be implemented for this sub-perspective is customer relations management (hereafter CRM) analysis which will enable to monitor processes related to this particular group of agents.

Issues concerning both reduction of energy price and productivity increase are related to internal business process perspective. That particular perspective of BSC developed in this study includes three out of four components introduced above – operation management, customer management and social process management. Operation management pursues an increase in operational efficiency. This implies implementation of supply chain management analysis and cycle-time analysis. Customer management is aimed at improving processes that directly affect customer satisfaction. CRM analysis is again considered as a solution. And finally, under social processes in this study environmental aspects of energy sector are taken into account. As possible indicators, the volume of carbon and greenhouse emissions may be selected.

The last perspective – learning and growth perspective – deals with factors that provide solutions to the problems supposed to be solved within internal business process perspective. Those factors are human capital and innovation processes. It is assumed to construct model reflecting the influence of human capital on the innovative performance of companies. As an indicator of human capital can serve the share of population with tertiary education, while innovativeness can be measured by the volume of R&D expenditures. Graphically, developed BSC is represented in Fig. 2.

At the end it is worth mentioning, that this study covers only theoretical part of the story, while all the above listed actions and mathematical models still have to be done and created. Thus, this study develops a framework for practical examination and outlines possible directions which scientific research can follow in the future.
In this study an attempt was made to propose a model of BSC for Armenian energy sector. Taking into account specific nature of this sector, conceptual changes of traditional approach were suggested. Three main perspectives were constructed, in contrast to traditional four perspectives. Welfare perspective was developed with two sub-perspectives – customer and producer – instead of financial perspective. For each perspective respective objectives were introduced and actions for achieving those objectives were represented. Indicators measuring quantitative results of undertaken actions were selected. Environmental issues were taken for the analysis as well.

Fig. 2. BSC model for Armenian energy sector
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DEVELOPMENT OF BALANCED SCORECARD FOR ARMENIAN ENERGY SECTOR

Key words- energy sector, strategic management, balanced scorecard.

Issues concerning strategic management of Armenian energy sector are addressed and discussed. The key aspects of Balanced Scorecard approach are highlighted. Mission and vision of Armenian energy sector are defined. Based on the conceptual transformation and modification of traditional Balanced Scorecard methodology, the Balanced Scorecard for Armenian energy sector is developed. Strategic objectives, initiatives and measures are defined for each perspective of the Scorecard. Furthermore, possible directions of future scientific examinations are outlined.

Адилханян Айк

ФОРМИРОВАНИЕ СБАЛАНСИРОВАННОЙ СИСТЕМЫ ПОКАЗАТЕЛЕЙ ДЛЯ ЭНЕРГЕТИЧЕСКОГО СЕКТОРА АРМЕНИИ

Ключевые слова- сектор энергетики, стратегическое управление, сбалансированная система показателей.

Обсуждены проблемы стратегического управления энергетическим сектором Армении. Рассмотрены важнейшие аспекты сбалансированной системы показателей. Определены миссия и видение энергетического сектора Армении. На основе концептуального переобразования традиционной методологии построена сбалансированная система показателей энергетического сектора РА. Для каждого компонента системы определены стратегические цели, инициативы и показатели. Более того, указаны возможные направления дальнейших научных исследований.