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**TRANSFORMATION OF THE ELECTRICITY MARKET OPERATOR AND ITS TASKS IN GEORGIA'S NEW ELECTRICITY MARKET.** *M.Machavariani. "Energy". №4(96). 2020. Tbilisi. p. 5-15. geo. sum geo. engl. rus.*

Discusses Electricity Market Operator role, one of the main participants of Georgian Electricity Market, in functioning of Electricity Market. Analysis current Electricity Market structure of Georgia. Outlines Electricity Market participants role in functioning of Georgian Electricity Market. Analysis obligations which are imposed on Georgia after becoming a member of Energy community and based on them discusses the transformation process of Electricity Market Operator.

*Ill. 1, bibl. 12.*

**KEY CHALLENGES OF GEORGIA'S ELECTRICITY MARKET.**

*M. Matchavariani. "Energy". №4(96). 2020. Tbilisi. p. 16-22. geo. sum geo. engl. rus.*

After signing a Protocol "Concerning the Accession of Georgia to the Treaty Establishing the Energy Community", Georgia took obligations to transform its Energy Markets. Accession Protocol envisages mandatory changes of electricity market by implementing so-called Third Energy Package. Respective requirements have to be implemented within the outlined deadlines. Georgia's Energy Market must go through major transformation towards fully competitive and liberalized market model by 1 January 2020.<sup>1</sup>

The paper discusses Georgia's Electricity Market, including advantages and challenges it faces. The advantages of electricity sector of Georgia include its large hydro potential, interconnections with neighboring countries, good geographical location, etc. However, there are challenges and risks such as significant winter deficits of electricity, which is produced by hydro power plants and have to be filled by imports and thermal power plants in order to meet demand, difficulty in attracting foreign investments to the sector because of legal uncertainties, supply of electricity to occupied territory of Abkhazia and more.

The paper studies current electricity market structure and discusses main challenges of the sector, which is going through major reforms in order to fulfill all the obligations country has undertaken. Among this challenges are guaranteed power purchase agreements, which were introduced as a renewable energy support mechanism, electricity supply to Abkhazia – cost of which is not paid, customer protection etc.

**ANALYSIS OF THE PRODUCTS OF THE BALANCING MARKET IN GEORGIAN ELECTRICITY SYSTEM.**

*A.Kokhtashvili, G.Khorbaladze. "Energy". №4(96). 2020. Tbilisi. p. 23-26. geo. sum geo. engl. rus.*

The article discusses the implementation of the balancing market. In addition, the balancing products that must be purchased by the transmission system operator for the reliable and safe operation of the power system. The analysis of the market concentration ratio of balancing market products is examined and the evaluation of such criteria as: market liquidity, residual supply index, Herfindahl-Hirschman index (HHI).

*Tabl. 4.*

**TO CALCULATION OF POLLUTION PROPAGATION IN COASTAL AREAS OF NON-TIDAL SEAS.**

*E.Khatishvili, Sh. Gagoshidze. "Energy". №4(96). 2020. Tbilisi. p. 27-32. rus. sum geo. engl. rus.*

In this article, in paragraph 1, for the purpose of construction of sewage outlets or clean sea water intakes for swimming pools located in recreation areas, relations are derived, which can be used to predict the size of clouds or slicks of the spread of pollutants impurities in the coastal zone of the sea. In paragraphs 2 and 3, a solution to the problem and an example of calculating the spread of conservative pollutants from a deep sea spillway towards the coast are proposed, taking

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<sup>1</sup> This deadline was postponed until 1 July 2021 due to some major reforms in the sector.

into account the river runoff and the surge of waves over the coast. In these solutions, the turbulent diffusion coefficient is determined taking into account the presence of sea waves and drifting currents caused by the wind. At the end of the article, some numerical examples of calculating the distribution of pollution concentration for the construction of a swimming pool, designed in one of the resort areas of the Black Sea coast of Georgia.

*Tabl. 1, bibl. 5.*

#### THE TECHNIQUE OF HOLOGRAPHIC EXPERIMENT.

*Z.Gvishiani, G.Dalakhishvili, K.Khazalia, Ts.Giorgadze, O.Sadjaia, G.Turmanidze.*  
"Energy". №4(96). 2020. Tbilisi. p. 33-41. geo. sum geo. engl. rus.

One of the main requirements for recording holographic interferometry is a high stability of the interference field, therefore, a prerequisite is to ensure the stability of the optical table and determine the sensitivity to external vibrations. During holography, if the interference lines move from maximum to minimum or vice versa, the interference structure will disappear and the recorded object will turn black.

*Ill. 8, tabl. 5, bibl. 8.*

#### EFFECT OF THERMAL ANNEALING ON THE ELECTROPHYSICAL AND INELASTIC PROPERTIES OF SI MONOCRYSTALS AND SI+0,5 AT.% GE:P ALLOY

*I Kurashvili, T.Kimeridze, D.Mkheidze, M.Kadaria, T.Melashvili, N.Gogolashvili, G.Darsavelidze.*  
"Energy". №4(96). 2020. Tbilisi. p. 42-50. geo. sum geo. engl. rus.

In the temperature range of 100-200°C nonlinear change of electrical resistivity, stipulated by annealing of nonstable thermal defects has been revealed in phosphorus-doped monocrystalline Si+0,5at.%Ge alloy.

Relaxation maxima in the internal friction and shear modulus spectra are stipulated by the point defects motion (~100°C) and by the interaction between the dislocations and thermal origin defects (400, 530-565°C).

Increase of dislocation origin relaxation maximum intensity revealed at 530-365°C temperatures and its activation characteristics have been analyzed by multiplication of vacancy-oxygen complexes in the annealing processes and by braking dislocation in the atmosphere of these defects.  
*Ill. 3, tabl. 2, bibl. 10.*

#### NATURE OF REVERSIBLE CREEP OF CONCRETE AND OTHER SOLID SUBSTANCES IN SURFACE-ACTIVE MEDIUM.

*M. Lordkipanidze, B. Khachidze.* "Energy". №4(96). 2020. Tbilisi. p. 51-56. geo. sum geo. engl. rus.

Theoretic and experimental studies have shown the reversibility of the affect of water and other surface-active substances on some material, especially on concrete under certain stress conditions.

Strength and deformation properties of the cement stone, concrete and solid substances mainly depend on the affect factor of the surface-active substances.

Based on our data as well as the experiments of other researchers, during gradual and low-speed charging of the samples under the creep affect, stress relaxation occurs between matrix and filler thus reducing the non-uniform stress field which creates conditions for more synchronous breakdown of certain volumes of the material. In such case the material strength is more fully used, load-bearing capacity is increased and long-term hardening effect of the material takes place.  
*Bibl. 17.*

## **DRY CONSTRUCTION MIXTURES.**

*M.Shengelia, N.Shaverdashvili, A.Chikovani. "Energy". №4(96). 2020. Tbilisi. p. 57-65. geo. sum geo. engl. rus.*

Contemporary dry mixtures are the specialized multi-component systems which are achieved by using various precisely defined binding substances, fractionated filler, finely dispersed mineral component, chemical and polymeric additive. Dry construction mixture is the mixture prepared at the factory in advance: in order to produce the construction fine-grained composite of the solution, mastic, glue, paint, cellular concrete and other materials, we should mix it with water and it will be ready to use.

*Ill. 1, bibl. 4.*