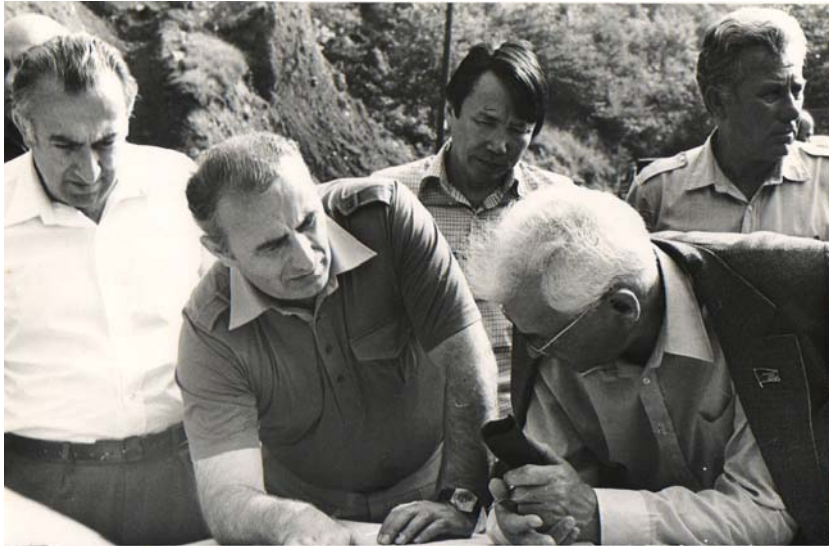


## CONGRATULATIONS!

**ANZOR CHITANAVA, Vice President of National Energy Academy of Georgia, is 75 years old.**

**Dear Anzor,  
Happy Birthday! Wishing You and Your Family Good Health and Long and Fruitful Creative Activities**



**P. Neporozhni, Minister of Energy and Electrification of USSR, A. Chitanava, Director of TbilHydroProect and I. Chedia, Manager of SakMtavarEnergо (to Namakhvani HPP Dam, 5 July, 1983)**

**Editorial staff requested to share his views about ongoing processes relating to the energy provision in the country and main directions of the future arrangement.**

**We believe, that the views and suggestions of true patriot and merited hydropower engineer deserve thorough study and practical activities need to be worked out in order to enhance hydroelectric construction.**

*Editorial Staff of Energyonline*

## IN ACTION IS EASY, ACTION IS DIFFICULT

Increased interest of the society to the future of energy development is quite understandable and, first of all, is caused by aggravation of energy situation all over the world. It is also a fact, that this process commenced long ago and is closely associated with the results of unfavorable environmental impact, overgrowth of the population on the planet and acceleration of energy development. It would be fair to mention, that certain role in kindling such interest is plaid by the authors of widely known publications and mass-media predicting exhaustion of energy and material means, danger of negative environment impact which should have been followed by human society's failure in the nearest future. Fortunately, as said "the steam was exhausted" and it was reported that such dangerous prediction had no reasonable scientific proof and that the care about human beings' wellbeing did not depend on searching optimal ways for further energy development.

Fundamental changes have been made in evaluating long-term estimations for the development of economics and material culture both in particular regions and the entire world civilization over the recent years. It became obvious that renewable energy reserves and limited range of their use result in the circumstance when each country has to find its own ways to optimize development strategy and achieve the level significantly exceeding the level of contemporary energy intensity. This problem for Georgia, as for the developing country, is essential. Unfortunately, the studies run in this direction todate do not allow to chose the best strategy for the implementation of long-term reforms in energy development and to suggest to the society for the discussions and support. The energy, as known, is the basis for economical, political, social problem solution also incorporating ideological and ethical elements. It is necessary to immediately start caring about future energy supply so that we can supply the energy to the consumers in reasonable amount, proper form and standards maintaining the environmental safety conditions. Such action plan should include all the means of obtaining primary energy, and should be aimed at using local resources. Given this, it is important, if not essential, for Georgia to direct all the efforts to the development of water power where minor efforts are yet made. Water power in Georgia has big potential and with its volume and distribution it is completely reasonable to use it as the basis for the country's energy safety and reliability. Today in Georgia 10.5 billion kW.h power is annually generated including 9.2 billion kW.h generated by the hydropower plants. This figure may increase to 40 billion kW.h over the next years. This is how economically and ecologically reasonable share of the country's total potential volume has been estimated.

Startup conditions for solving this problem have been already created in the country, diversification of energy resource supply has been conducted and it has been already several years that the country can feel safety and reliability of the energy supply, and recommencement of concurrent works with energy systems of the neighbor countries has significantly increased economic parameters of acting hydropower plants and such parameters have come close to the anticipated value, spare spillage of water resources and import of the energy have been brought to minimum when the level of energy export has been considerably increased. This process will become more irreversible as a result of terminating the construction of high voltage lines which has been already commenced and this will significantly increase the investments in the power industry. Stability in the power supply as well as increase of investors' interest and support of wide range construction of energy generation units have been achieved as a result of legislative, normative and political solutions and the reforms run. Declaration about the commencement of the

construction of fifteen different size and function hydropower plants is clear proof for this, and over the next 10 years this will considerably change the structure of the power generation and consumption in the country.

Besides, certain part of the population mistrusts the priority development of waterpower engineering or does not share the necessity of the increase of its share in the power industry balance, the availability of Georgia's participation in international and global systems, prioritize the energy conservation policy, construction of medium and small power units and does not acknowledge that the increase of power consumption is an objective reality and is conditioned by such factors as demography, energy, raw resources, food, water, environment, etc.

It is recognized that water power is economic renewable power resource to generate power and there are number of various reasons why we have to concentrate on it for providing future power supply. First of all this is the potential of complex use of water resources (drinking water, irrigation, sports, tourism, fish industry, struggling against flood, etc.), fulfillment of economic catalyst functions in order to develop other natural resources and to improve living level of the population, provision of maneuvering and reliability in generating and accumulating power.

However, there is anti hydropower engineering campaign in the country which should be considered as a continuation of "green movement" commenced in the 80ies, in the last century. We should not forget that this campaign at that time was the reflection of the processes developed all over the world and turned out to be very harmful for our country.

According to official statistic data, Georgia appeared in the number of those very few countries, where the construction of the units (Khudoni hydropower plant, Namakhvani hydropower plant) was shut by strong influence from the society's side and Georgia failed to continue the construction due to subjective or objective reasons, when other countries being in similar situation managed to retest and complete the project, improve operational technologies and recommence the operation of the shut units.

On the other hand, even today some of our politicians and nonexperts stubbornly repeat the topic of unreasonableness of the construction of Khudoni HHP and Namakhvani HHP, when the projects have been rechecked by many widely recognized international engineering and consultation and environmental organizations, and it has been assumed that such projects fully comply with the interests of future development of the country. We should also remind the opponents, that if the construction is not continued, we will have to prepare and implement their suspension projects which would cost the country several hundred million US dollars in order to avoid escalation of destructive processes already commenced due to unfinished construction with all the negative outcome this might cause. Money spent on such activity will have no recovery when 3,5 billion kW.h power which will annually be generated by constructing these two plants will be used for the country's prosperity and significantly decrease the demand on natural gas and import of gas, oil products and other deficit energy resources.

I believe that current "green movement" is focused on just the activities which are aimed at the improvement of legislative and normative acts. The fact that all the important projects are not approved and the licences on the construction are not issues without the assessment of environmental and social impact is a clear proof for this. Requirements they put forward could be fit into three questions, such as why, how, when? and such questions should not be left without answers.

We are fairly proud with the abundance of our water resources. Communication with 26 thousand rivers should be based on just economical interests. Equality of the environmental and economical interests should define our partner and non-exploitative approach. I think the activities run to this direction together with their improvement require reasonable compromise. In fact, this won't be easy but it is achievable with constructive dialogues rather than with contradiction although emotions still prevail professionalism in the country.

The basis for my optimism is that the society has well acknowledged the importance of energy independence over the last 20 years. The society understands that the progress in the energy sector is impossible without high electrification level and principally new technologies. What does loss of inertia in the energy mean? It means that the entire domestic product volume depends on the energy flexibility and the flexibility of revenues is a must for achieving high living level. Obviously, it is impossible to achieve modernization of the economy with just optimism, first of all, it is required to make specific steps for elaborating long-term economic development estimation, otherwise it will be impossible to determine the growth of power consumption speed and the ways of its satisfaction. To be more precise, it is aimed at estimating the tendencies of range of main proportions in energy economy in perspective and to identify the problems that should be overcome in order to achieve optimal results.

It should not be difficult to imagine what higher speed of annual power increase than observed today means for the developing country like Georgia. Firstly, this is more heat, light, water, transport, food and industrial products, service, etc. This demand increases more and more every year, and it will be impossible to satisfy it with current units and by their upgrade, it will be necessary to activate additional capacities together with the improvement of the efficiency of the power use. Thus, the country's policy to develop big water power potential is quite reasonable. Its future privilege will be more and more obvious especially in connection with increased prices on power-plant fuel and will be more visible the stronger the restrictions in the power supply are. However, power generation in Georgia should be increased on the basis of local water power resources this will not result in the decrease of the prices on power. We should understand that the operation of both new hydropower plants and other generation units (wind, sun, thermo energy, etc.) should become the basis for improving the wellbeing of the population, i.e. the revenues will appear flexible against the prices and the feeling of unfairness caused by current tariffs in all consumers' categories will be eliminated.

Tariff differentiation (seasonal, daily) will be inevitable and its application will really increase the parameters of energy conservation and decrease the tendency to the power consumption increase.

Hydropower projects, as a rule, are more labor-consuming than capital-consuming. They allow to employ local people, support to establish specialized companies and develop industrial, social and construction infrastructure in the regions. The more completely the multi-aimed use of water resources is provided in the project the higher the importance of hydropower use. Current hydropower projects in this regard have significant gaps and need to be reviewed and corrected in the section of estimation of the expected economical and ecological results, determination of the composition and parameters of the energy infrastructure units so that they fit to the environmental requirements and operate in balance.

**In terms of technical and political issues, use of the potential of bordering rivers considering the interstate interests is an additional problem. World's experience is familiar with the examples of successful cooperation in this regard, and they are regulated by various international concepts and interstate agreements.**

**This issue became especially topical for our country as well, and we may say that together with the interstate aspects it carries international interests as well and is about joint use of the water resources and power potential of Kura river taking into the account the interests of Turkey, Georgia and Azerbaijan. Close cooperation in this matter has been initiated already. The parties are interested in improving the river regulation quality on Turkish and Georgian territories which, except for the energetic purposes, is conditioned by sanitary and ecological requirements in Georgia. This is about the dilution of chemically clean "hungry" water flowing from Tbilisi-Rustavi sewage collector and restoration of lost biological and ecological balance in the river bed. It is obvious that, except for the aforesaid, creation of the regulating reservoirs on Turkish and Georgian territories will allow to significantly increase the parameters of hydropower plants acting and planned on our territory and make the performance of the activities aimed at softening the negative results caused by Kura river breakthrough and catastrophic floods which repeat once every 5-10 years due to which rural economy, industrial and water economy units suffer several tens of million loss more manageable.**

**The parties have not reached final agreement on this issue, however there is a solid basis to assume that the best alternative will be worked out by the society's engagement and joint efforts of the experts of both countries, and its implementation will commence soon.**

**Different although still important problems are expected in case of developing water resources and power potential of the boarding Alazani and Tergi rivers. Due to diametrically different natural environment and regional specificity, it is necessary to timely initiate the survey required for justification of technical solutions which should cover all the issues necessary for identifying the restrictions in nature management and effectiveness. Seems that the actions relating to this issue will be associated with serious problems, and we shall not allow to repeat the example of Chorokhi river when Turkish party did not properly evaluate the issues relating to possible deformation of the Black Sea Coastline, Batumi-Kobuleti section, caused by the reservoirs located on its territory and did not provide in the project the volume and cost of adequate short-term and long-term artificial compensation steps.**

**Since the power consumption is the field of economy, for the society to believe the privilege of the scenario focused on the water power, it is necessary to identify other possible local resources in order to satisfy the consumption and power supply for the near and far future.**

**Unfortunately, it is actually impossible to solve this problem with the structures currently functioning in the country. Highly qualified scientific-research, design-exploration and construction organizations are not functioning any more, no fundamental researches are run due to the absence of material and technical basis, research area of goal-oriented practical works is small and no new normative papers are drafted, etc. There is the situation in the country when it is impossible to elaborate and implement medium and large energy projects with our own forces. There is no highly competent Georgian hydropower school any more. Newly formed structures are more presented by energy related prefixes in their names rather than by highly professional scientists, engineers and civil engineers. That is why, it is natural that their participation in hydropower designing is minor and this situation will not change until radical changes in preparing young engineers**

and technical staff are made and the level of the engagement in current projects is improved. Just symbolic involvement of local labor forces in the construction processes won't revive Georgian hydropower school, however it carries significant social and political importance. Several years are required to bring up professional project and construction managers and they won't become good managers in case they are isolated from specific business.

One of the main hampering factors is also that the cost of the design-exploration and scientific-research activities here is too low, 3-5 times less than abroad, and this direction became less attractive for younger generation. Their performance terms, as a rule, are not balances against the construction duration and make 10-15% when under international standards they should range within 35%. This is where the topic of unfaithfulness to the projects elaborated by the local companies and less participation chance in the international tenders comes from. The majority of Georgian companies counting more than 90 years history having large list of unique functioning hydropower structures in their assets do not satisfy the terms and conditions of the international tenders with the topic and volume of the works annually performed over the last five years, and, if we also add to this that the property of such organizations is quite symbolic and does not carry the value of intellectual product in itself, this very market will be shut for them for quite long.

However, the first promising signs on the way of overcoming the obstacles are already observed. Local engineering and consultation company Gross Energy Group, under the instruction of the Ministry of Energy and Natural Resources, analyzed and elaborated the proposals for the development of 97 new hydropower units in Georgia, which drew the investors' interest and resulted in their cooperation with the company. This very company, Gross Energy Group, became the first Georgian company, which by means of the direct selection obtained from the investor the contractor's right to prepare full feasibility study of the hydropower plant in Georgia. It also successfully cooperates as a sub-contractor with several well-known foreign companies, which are involved in Georgian energy market and have been granted the right to construct, operate and possess the hydropower plants. The most successful on this way carrying guiding role was the cooperation with governmental and private structures of Norway. Plans of developing the energy potential of two major Georgian rivers, Kura and Rioni implemented with their funds drew the interest of International finance institutions and made the investors more active. Professional and joint efforts of the private company Clin Energy Invest made it possible to commence one of the biggest hydropower projects in Georgia, in Achara region, over the last years for the development of the resources of the river Acharis Tskali. Besides, the works to identify new effective projects that may be implemented within the rivers Tskhenis Tskali and Alazani basins are being held within the long-term cooperation agreement with this company. Significant works are conducted in order to prepare automatic designing programs and information bank considering the specificity of hydraulic construction. Finally, the most important of all is that the company together with the customer, Georgian company called Alliance Energy, and Georgian construction company called Hydromsheni is involved in the construction of Nabeglavi HHP on Gubazeuli river in Guria for extending the specialization of the hydraulic construction.

The steps of Gross Energy Group should be considered as quite realistic steps, and we should suggest that its further expansion on the account of the formation of one team of independent companies involved in the research, service and construction activities would be soon achieved.

The process has been already commenced and supported. It should become worthy example for the other companies too, and then the hydraulic construction in the competition conditions will be able to solve the problem of the country's energy supply in timely manner and in the required volume.

So, this is the brief preliminary evaluation of the opportunities and privileges of the hydropower engineering activities required for improving the future power consumption in Georgia which should be subject to modeling in order to completely analyze the chosen strategy. Work group consisting of independent experts should undertake this mission, and such group will have high faith mandate both inside and outside the country, as it is impossible to achieve success without the support and assistance of international community.

I believe this work will be initiated as soon as possible and appropriate document allowing to meet the surprises expected in the energy sector with significant reserves of power resources will be drafted rather than making mistakes and facing the reality caused by power shortage, which may occur due to inaction.

**ANZOR CHITANAVA**  
**Vice President**  
**National Energy Academy of Georgia**

**E-mail: [info@gegroun.org](mailto:info@gegroun.org)**