



Editorial – Issue 33 – October 2020

The world is going through a moment we would never have imagined, which cannot even be called a crisis, because it is far beyond that. It is a point completely outside the curve, comparable to a catastrophic event. Nobody could expect that. However, we know that we are subject to such extreme phenomena. In fact, the entire history of the planet, not just of humanity, is full of cataclysmic phenomena caused by small deviations in the evolutionary order, which, occurring in a combined way, with an almost zero probability of occurrence, end up annihilating entire species.

Since it is not reasonable to expect something like this to happen, it is up to us, once in the middle of the cataclysm, to do everything possible to minimize the damage. In addition, it is necessary to think about seeing opportunities in the face of adversity. In fact, facing difficulties can mean the trigger for evolution, for innovation, for development. It is an opportunity to rethink models and paradigms, and to aim at building a more evolved structure. Like much of the productive system, the Brazilian energy sector is in a favourable situation for changes.

However, adversities give rise to attitudes that can pose a great threat, for example, the tendency to withdraw resources and efforts, at any cost, from activities aimed at evolution to fully devote them to circumvent the adverse situation. As much as the situation calls for external resources, one should not exhaust the inputs related to certain activities that seem not to be so important at that very moment or that do not tend to generate results in the short term. The fundraising must be balanced and well planned, so that the destruction, in the end, is not even greater. In other words, the progress of science must go on, because, as we can see in the areas of knowledge directly linked to the pandemic, it can represent our own survival.

The progress of science in the area of energy has as a major catalyst the R&D programme regulated by the Brazilian Electric Energy Agency (ANEEL). During its evolution, the intention of the regulatory agent to promote the improvement of the electric sector through the production of specialized knowledge, by means of projects of a scientific nature, focused on the solution of real problems and aimed at the sustained development of the sector, was clearly perceived. Today, more than ever, there is a need to take a further step in crossing the bridge that connects the scientific world to the business world, namely, to transform the scientific differentials achieved into solutions that bring a competitive advantage to its authors and therefore to society.

Doing so may not be as simple as one might think. Producing a business model that takes full advantage of scientific innovation is a challenge. Often it is even necessary to propose changes in regulation. Sometimes it is necessary to overcome legal barriers. However, our main enemy seems to be our own culture, our attitude towards innovation. Our duty, therefore, is to question our own stance and overcome our own mental barriers. Our responsibility is to invent the next energy sector, which, of course, will have vulnerabilities, but will also have overcome important barriers and will certainly bring a greater degree of well-being to citizens.

The scientific journal Espaço Energia is also at a turning point. In order to gain more strength and exploit its potential as a vehicle for scientific dissemination of the Brazilian energy sector, the journal will now have the support of new institutions and people. The journal was created in 2004 at Copel - Companhia Paranaense de Energia. At this moment, new participations in the editorial base are being initiated, with UFPR – Universidade Federal do Paraná” and LACTEC – Instituto de Tecnologia para o Desenvolvimento. Each of the three supporting institutions will have two publishing representatives. However, our true strength is in the editorial committees, the referees belonging to both the international board and to the editorial board, who, with knowledge and experience in their areas of expertise and, of course, their willingness and interest in contributing to scientific dissemination, guarantee the quality of the works published here.

I would like to give a special thanks to Copel for the opportunity I had to propose, create and manage this enterprise, over the past sixteen years, allowing for the establishment of a network of experts in the field, both through the members of the boards and our diligent authors, with a great potential for contributions through the dissemination of scientific advancements and innovative applications, bringing increasing benefits to society. We also welcome the new supporting institutions, wishing them success in their attempt to consolidate this scientific vehicle and contribute to the evolution of the electricity sector.



This issue features five excellent articles, covering subjects very relevant to the electricity sector. The first is a case study on the use of biogas generated in a sewage treatment plant, analysing its potential for generating electricity and avoiding emissions of carbon dioxide. The second makes a critical review of the role of energy storage systems in the management of intermittent renewable sources, a subject that is becoming increasingly important in the sector due to the new and growing insertions, especially wind power. The third paper deals with public lighting bringing important information about the benefits of LED luminaires. The fourth paper analyses the performance of experimental photovoltaic systems in the Santa Clara HPP reservoir, located in the municipality of Pinhão, in the State of Paraná, Brazil. Finally, we address the issue of energy storage again, with a paper on pumped hydro storage in large hydroelectric systems, which brings a case study to the southern region of Brazil.

We wish you all a good reading. May the works published on this issue be of great value to all of you. We thank the authors for their interest in publishing in this journal and for the quality of their papers. I bid farewell to the position of editor-in-chief and to the editorials I took great pleasure writing in this journal, welcoming the new editors. I wish you all great success!

Klaus de Geus
Editor-in-chief