

Topical Collections List in Section

Energy Economics and Policy in China

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Review Papers in Energy Economics and Policy

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Special Issues List in Section

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Economics and Finance of Energy and Climate Change

Guest Editors: Prof. Dr. Carla Oliveira Henriques and Prof. Dr. Elisabete Neves

Deadline: **30 August 2022**

Financing Renewable Energy in the Energy Market

Guest Editor: Dr. Aneta Michalak

Deadline: **31 August 2022**

Consumers' Behavioral Economics in Energy Transition

Guest Editors: Dr. Özgür Yildiz, Prof. Dr. Reimund Schwarze and Dr. Gabriela Michalek

Deadline: **20 September 2022**

Forecasting and Decision Support Systems for Energy Market Development

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Prof. Dr. Xiaofeng Xu

Deadline: **20 September 2022**

Sustainable Finance in Energy Sectors

Guest Editor: Prof. Dr. Beata Zofia Filipiak

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I: Energy Economics and Policy

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Section Information

Energy policy is the manner in which a given entity (governments, industry groups, businesses) address issues of energy development, production, distribution, and consumption. This Section also provides a forum for communicating recent advances in energy policy, economics and innovation aspects of economics and policy of energy supply, trading, delivery and consumption, combining expertise in innovation theory, energy system organisations and institutions, and the wider policy and regulatory context of energy. Topics of interest comprise, but are not limited to, the following:

- Energy finance and energy markets
- Energy demand and supply
- Sustainable energy transition
- Energy and environmental economics/policy
- Energy policy
- Energy generation, storage, distribution and use
- Relationships between energy and economic development

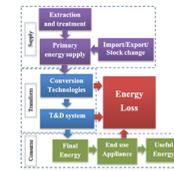
Featured Papers

DOI:10.3390/en13020494

Internet of Things (IoT) and the Energy Sector

Authors: Naser Hossein Motlagh, Mahsa Mohammadrezaei, Julian Hunt and Behnam Zakeri

Abstract: Integration of renewable energy and optimization of energy use are key enablers of sustainable energy transitions and mitigating climate change. Modern technologies such the Internet of Things (IoT) offer a wide number of applications in the energy sector, i.e, in energy supply, transmission and distribution, and demand. IoT can be employed for improving energy efficiency, increasing the share of renewable energy, and reducing environmental impacts of the energy use. This paper reviews the existing literature on the application of IoT in in energy systems, in general, and in the context of smart grids particularly. Furthermore, we discuss enabling technologies of IoT, including cloud computing and different platforms for data analysis. Furthermore, we review challenges of deploying IoT in the energy sector, including privacy and security, with some solutions to these challenges such as blockchain technology. This survey provides energy policy-makers, energy economists, and managers with an overview of the role of IoT in optimization of energy systems.

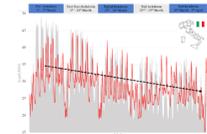


DOI:10.3390/en13133357

Impact on Electricity Consumption and Market Pricing of Energy and Ancillary Services during Pandemic of COVID-19 in Italy

Authors: Emilio Ghiani, Marco Galici, Mario Mureddu and Fabrizio Pilo

Abstract: At the moment of writing, in Italy, there is an ongoing pandemic of coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Its outbreak is leading to severe global socioeconomic disruptions impacting on all economic sectors from tourism, industry and the tertiary sector, up to the operational and opening of public offices, the closure of schools and the organization of families. Measures adopted by the Italian government to deal with the COVID-19 emergency have had direct effects both on people's daily lives and on the activity of most industrial and commercial production companies. These changes have been unequivocally reflected also on the Italian electricity system, which has shown unprecedented behavior in terms of both energy consumption and volume—and subsequently, in the observed share of renewable and conventional production technologies. The goal of this study is to show the impact on the power industry of all the restrictions and lockdown of the activities in Italy and to discuss the effects of COVID-19 outbreak on the bulk power system and the entire electricity sector. In particular, the consequences on load profiles, electricity consumption and market prices in Italy, including the environmental aspects, are examined.

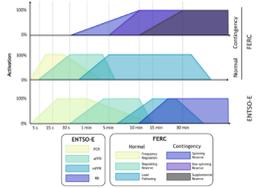


DOI:10.3390/en14040846

A Critical Review of Demand Response Products as Resource for Ancillary Services: International Experience and Policy Recommendations

Authors: David Ribó-Pérez, Luis Larrosa-López, David Pecondón-Tricas and Manuel Alcázar-Ortega

Abstract: Demand response is a key element of future power systems due to its capacity to defer grid investments, improve demand participation in the market, and absorb renewable energy source variations. In this regard, demand response can play an important role in delivering ancillary services to power systems. The lack of standardization and ancillary services programs prepared for traditional generators have blocked the participation of demand in these services. Nowadays, increasing needs to ensure the security of supply, renewable fluctuations, and information and communication technology advances are boosting the interest in demand response products to deliver ancillary services. While countries have had lengthy experience with these programs, others are starting from almost zero to develop these programs. To our knowledge, no analysis or standardized comparison exists of the different parameters and prices of demand response in ancillary services among different countries. Our study reviews more than 20 power systems around the world and their programs to classify them according to standard demand response parameters. At the end of the paper we discuss the main characteristics and prices that face demand response in ancillary services markets and a series of policy recommendations to policymakers to improve the deployment on demand participation in ancillary services.



DOI:10.3390/en14041056

Effects of the COVID-19 Pandemic on Energy Systems and Electric Power Grids—A Review of the Challenges Ahead

Authors: Aviad Navon, Ram Machlev, David Carmon, Abiodun Emmanuel Onile, Juri Belikov and Yoash Levron

Abstract: The COVID-19 pandemic represents not just a global health crisis, but may signal the beginning of a new era of economic activity, the potential consequences of which we currently do not fully understand. In this context, the mid-to-long-range impacts of the pandemic on the energy sector have been studied extensively in the last few months. Despite these efforts, the pandemic still raises many open questions concerning the long-term operation and planning of power systems. For instance, how will the pandemic affect the integration of renewable energy sources? Should current power system expansion plans change in light of the COVID-19 pandemic? What new tools should be provided to support system operators during global health crises? It is the purpose of this paper to better understand the many aspects of these open questions by reviewing the relevant recent literature and by analyzing measured data. We point out the main challenges that the pandemic introduced by presenting patterns of electricity generation and demand, frequency deviations, and load forecasting. Moreover, we suggest directions for future research that may assist in coping with the mentioned challenges. We hope that this paper will trigger fruitful discussions and encourage further research on these important emerging topics.

