



“Gheorghe Asachi” Technical University of Iasi, Romania



EDITORIAL

INTRODUCTION TO THE SPECIAL ISSUE ON

ADVANCES IN ANALYZING AND MANAGING CARBON EMISSIONS

The Intergovernmental Panel on Climate Change (IPCC) reported that the Earth was becoming warmer since the second industrial revolution, which is very likely caused by increasing concentrations of greenhouse gases, aerosols (small particles), and cloudiness. The largest known contributors are human activities, such as excessive fossil fuel burning and deforestation, which releases carbon dioxide to the atmosphere and reduces its absorption, respectively. Global warming has posed a severe threats to the world's ecological system and humanity; if we do not take measures to reduce carbon emissions and control climate change, many more animals and even mankind will become extinct.

Fortunately, governments, organizations, and many people are now aware of the threats posed by climate change and have started to take measures to reduce carbon emissions to mitigate global warming. For instance, the United Nations (UN), the European Union (EU), China, and many other countries have enacted legislations or designed mechanisms such as mandatory carbon emissions reduction, carbon tax, and carbon emissions trade to curb the total amount of carbon emissions, which include the Kyoto Protocol (UNFCCC 1997), the European Union Emission Trading System (EU-ETS), the United Nations Framework Convention on Climate Change (UNFCCC), the Copenhagen Accord, among others.

To respond to the regulations on carbon emissions reduction, firms can adopt more carbon-efficient technologies and equipment, or optimize their management decision making on supplier selection, production, transportation, and logistics and supply chain management to reduce carbon emissions. Such managerial approaches may reduce more carbon emissions at less or no cost than adopting low-energy-consumption technologies.

In order to put together recent original works on analyzing and managing carbon emissions in a single source of reference, we organize this special issue (SI). We selected 29 papers from about 400 papers presented at the 2014 International Conference on Logistics, Informatics and Service Sciences (LISS'2014) and other submissions. After a rigorous refereeing process, which took two to three rounds of review for each paper, we finally accepted 18 papers for publication in this SI. These papers address a broad range of significant issues associated with carbon emissions analysis and assessment, new energy development, and managerial approaches to curbing carbon emissions.

There are several papers on carbon emissions analysis and assessment. The paper titled “Evaluation on low-carbon logistics development level of Beijing city in china based on DPSIR model” by Chen, Zhang, and Zhang evaluates the level of low-carbon logistics development in Beijing using the DPSIR model. The paper titled “Model for loss assessment due to floodplain flood in the lower yellow river” by Zhang, Han, Peng, and Xu provides a loss assessment model for floodplain flood. The paper “Nitrogen non-point source pollution identification based on SWAT in Qinhuangdao City” by Qu, Zhou, and Ren presents a method to identify Nitrogen non-point source pollution and applies it to Qinhuangdao.

There are also papers on new energy development and energy conservation. One paper titled “Dynamics analysis of microbial fuel cell system and its power and current PID control based on critical proportion degree method” by An, Wang, Zhang, and Yang examines the microbial fuel cell system and its power. Another paper, “Developing unconventional oil and gas resources in China: a conceptual analysis framework” by Wang, Guo, Shi and Liu provides a framework to analyze the development of new energy in

China. The paper titled “Industrial energy conservation and emission reduction TFP in China” by Xiu, Liu, and Zhang considers how to conserve industrial energy and reduce carbon emissions.

Other papers developed issues on managerial approaches to curbing carbon emissions. One set of papers deal with the low-carbon transportation system. For example, paper titled “Developing urban low-carbon transport system in developed cities of China: An example of Jinan” by Hang, Zhang, Liu, and Qiu uses Jinan as an example to examine how to develop a low-carbon urban transport system in a developed city. Another paper titled “Integration of congestion-related emissions in a transit bus scheduling problem during rush hours” by Chen, Tang, Nie, and Lin investigates the carbon emissions of buses related to congestion during rush hours. The urban traffic jam management in Beijing using system dynamics is examined in the paper titled “System dynamics for urban traffic jam management in Beijing” by Yang and Wang examines

Another set of papers are on low carbon supply chain management. The paper titled “Fuzzy multi-objective model for supplier selection under considering multiple products in low carbon supply chain” by Pan, Liu, Guo, and Wang presents a multi-objective model for supplier selection, which incorporates carbon emissions into the model. Another paper titled “Coordinating supply chain to reduce carbon emissions” by Gao studies how to reduce carbon emissions by coordinating supply chains.

The paper “Research on supply chain’s fuzzy-random multi-objective programming model with constraint of CO₂ emissions” by Liao, Wu, Jin and Ren presents a fuzzy-random multi-objective programming model for supply chain management, which incorporates carbon emissions into the model as a constraint.

The Guest Editors and the authors hope that by publishing their contributions in *Environmental Engineering and Management Journal* they can add complementary value to the global efforts towards fundamental changes in the way the world manages carbon emissions and to the reduction of environmental, economic and social burdens that the modern-day industrial economies continue to generate.

Guest editors:

Guowei Hua

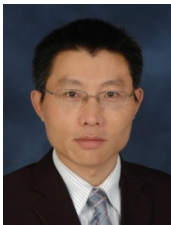
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