Allocation of Greenhouse Gas Emissions in Supply Chains

Abstract

We formulate the greenhouse gas (GHG) emission responsibility problem as a cooperative game, referred to as the GREEN game, and suggest allocations of GHG responsibility among supply chain members. We prove that the GREEN game has a nonempty core and identify some allocations that are extreme core points and are used in practice. We derive an expression for the Shapley value of this game, which has a simple and intuitive interpretation, and provide its three distinct axiomatic characterizations.

CV

Greys Sosic obtained her B.Sc. and M.Sc. in Mathematics from the University of Zagreb, Croatia, and her ph.D. in Management Science from the University of British Columbia, Vancouver, Canada. She conducts research in the area of supply chain management, competition and cooperation in supply chains, environmental sustainability, and applied game theory, with particular emphasis on coalition formation and stability. Her work has been published in journals such as *Management Science*, *Operations Research*, *Manufacturing and Service Operations Management* (MSOM), *Production and Operation Management* (POMS), and *European Journal of Operational Research* (EJOR). She is an associate editor for *Management Science*, *MSOM*, *POMS*, *IIE Transactions*, and the *Decision Sciences Journal*.