Professor Maria Grazia SPERANZA

Department of Economics and Management – University of Brescia

Operations research for sustainability in transportation and logistics

Information and communication technologies (ICT) nowadays enable users to access, store, transmit, and manipulate information. ICT are changing institutions, companies, the society itself. At the same time, the society is becoming increasingly sensitive to environmental issues and to sustainable solutions. These two mega-trends are driving research in transportation and logistics.

Decisional problems in transportation and logistics have been studied for decades by operational researchers. The most recent technological developments and the environmental concerns have created new research challenges and opportunities. Given the availability of huge amounts of data and the complexity of the problems, models and algorithms are even more vital than in the past.

In this talk recent research directions in the field of freight and people transportation will be discussed. A major direction aims at reducing the number of traveling vehicles and the overall distance traveled. This direction includes the study of integrated problems and of other problems coming from collaborative initiatives. Another direction concerns the coordination of the routes followed by traveling vehicles aimed at avoiding congestion. Integration, collaboration and coordination are enabled by ICT and favor a more efficient use of underused resources, such as cars, trucks, roads, with a positive impact on the environment.