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Introduction to Analytics, Informatics and Decision Support for Sustainability Minitrack

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The final report of the World Commission on the Environment and Development, also known as the Brundtland Report, defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Subsequent international efforts such as the Rio de Janeiro Conference in 1992, the publication of Agenda 21, the Rio+5 special session of the United Nations (UN) in 1997, the formation of the World Business Council for Sustainable Development in 1997, and the Rio+20 UN Conference on Sustainable Development can be credited with raising environmental concerns to increase public awareness, serving as an initial focus and impetus for collaboration as well as conflict between government, industry, and academia. The Johannesburg "Plan of Implementation", revealed at the Earth Summit 2002, affirmed commitment by the UN to fully implement Agenda 21. Environmental management systems standards (EMSS) such as ISO 14001 and the European Eco-management and Audit System (EMAS) provide a sound practical basis for environmental management within organizations.

Information systems (IS) support both immediate action and sustainable long-term strategies, helping to address the urgency and scope of environmental problems. This mini-track emphasizes the significant research synergies that exist between IS and environmental management for sustainable development from an organizational as well as a technical perspective. Collaboration and cross-fertilization between these domains can be mutually beneficial and may in fact present unique, timely and socially relevant 'real-world' research opportunities as well as viable public sources of empirical ecological information for interdisciplinary research and application. The mini-track accommodates both research articles and practitioner reports exploring technical and organizational issues that pertain to the development, implementation, and deployment of IS in sustainable development.

This year's conference has attracted contributions along two broad themes. The first theme centers around global scenarios and information management. In that regard, Newlands et al. describe an integrated model for exploring potential impacts of global changes on the Canadian agricultural system. The methodology integrates stakeholder/expert knowledge, empirical and process-based model algorithms using remote-sensing and national agri-environmental datasets. With respect to energy and carbon emissions, Melville and Saldanha present the results of an exploratory empirical analysis into the extent to which regulations (Kyoto Protocol and UNFCCC) and management practices (carbon emission reduction targets and managerial incentives) are associated with their adoption. The results suggest that managerial incentives and carbon reduction targets are strongly associated with the adoption of information systems for managing environmental resources. With the proliferation of EMIS, Jamous et al. explores issues and requirements pertaining to the development of EMIS with a particular emphasis on the development of a Light-Weight Composite Environmental Performance Indicators (LWC-EPI) solution.

The second theme centers on stakeholder knowledge. Rogers et al. use agent-based modeling to study the complexities associated with making decisions in an IT/S project context. The findings reveal variations in the types of project decisions, and show that the inclusion of environmental considerations improves the financial and environmental benefits of the resulting project portfolio. Scharl et al. also focus on environmental decision making by presenting a Web intelligence and visual analytics platform to aggregate, integrate and analyze climate change knowledge from multiple stakeholders. Gray et al. recognize the importance of stakeholder knowledge in environmental decision making by proposing a participatory modeling tool based on Fuzzy Logic Cognitive Mapping (FCM) called 'Mental Modeler' which makes the mental models of stakeholders explicit and provides an opportunity to incorporate different types of knowledge into environmental decision-making, define hypotheses to be tested, and run scenarios to determine perceived outcomes of proposed policies. While Jetter and Sperry describe an approach that is based on Fuzzy Cognitive Map Modeling that helps product planners to capture, understand, and assess stakeholder needs and their interdependencies to aid systematically in the design and selection of product concepts that avoid corporate irresponsibility.

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