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EDITORIAL

During August 2017, the IV International Conference Industry and Organizations (CIIO 2017) and the II Colombian Conference on Operational Research (ASOCIO 2017), brought together in Medellín-Colombia researchers who presented and discussed models, methods and applications of Industrial Engineering and Operational Research, respectively. The contributions presented included works in modeling, theory, algorithms, and successful applications. Both conferences highlighted how Industrial Engineering and Operational Research can play an important role in decision making for applications in the fields of sustainability, food security, healthcare, education, energy, mobility, logistics, and scheduling, among others.

The fourth version of CIIO [1] was dedicated to the role of Industrial Engineering and Supply Chain Management and their impact on sustainable development. With an orientation to contribute to achieving specific 2030 agendas of Sustainable Development Goals [2], the conference had two plenary speakers and ten keynote speakers, all of them from five different countries including Chile, Colombia, México, the United Kingdom and the United States. These talks presented works on food security, healthcare systems, education, affordable energy, industrial innovations, and sustainable cities. The closing plenary session was presented by Professor Sally Brailsford, Coordinator of the EURO Working Group on Operations Research Applied to Health Services (ORAHS).

The second version of ASOCIO [3] defined an academic agenda that allowed researches to identify new topics in the application of Operational Research, and to build networks that strengthen the research community in the field. The conference offered five tutorials on the areas of healthcare, analytics, electrical systems, geographical location analysis, and electric vehicle routing. The conference also offered a plenary session by Professor Michael Trick, President of the International Federation of Operational Research Societies (IFORS), who presented the influence of Business Analytics on Operational Research.

These conferences presented research trends and opportunities in Industrial Engineering and Operational Research. These two areas are evolving from classical industrial and manufacturing applications which typically pursued economic objectives exclusively, towards more integral, interdisciplinary research problems that seek improvements in the areas of sustainable development. These conferences also included applications of classical research techniques and problems such as optimization, simulation, stochastic processes, applied statistics, decision analysis, data envelopment analysis, logistics, supply chain, and production planning. Moreover, research opportunities and new trends identified in the conferences include:

- Food security: modeling and design of agri-food and meat supply chains, hierarchical planning in precision agriculture.
- Healthcare: public policies in healthcare, cost-effectiveness analysis, diseases diagnosis, medical treatments design, operating room scheduling, home healthcare services, emergencies medical services.
- Education: academic departments planning, scheduling and timetabling of academic activities, efficiency analysis of educational institutions.
- Energy: waste-to-energy design and implementations, biomass conversion into fuel, photovoltaic energy, electrical systems planning, electricity supply chain.
- Industry innovations: business analytics, data mining, organizations life cycle analysis, bi-level optimization for production planning.
- Sustainable cities and communities: infrastructure public investment, urban planning, cities and industries, routing and logistics management of electric vehicles, humanitarian logistics.

In this issue, Revista Facultad de Ingeniería of Universidad de Antioquia, presents three works selected from CIIO 2017 and ASOCIO 2017, which contribute in the areas of energy and sustainable cities. The first work presents an environmental and logistics assessment of biodiesel produced from waste cooking oil, for a waste-to-energy implementation plan in Cali, Colombia. The second one formulates a model to solve a type of vehicle scheduling problem derived from the operation of the mass transit system (MIO) in Cali, Colombia. Finally, the third work presents a heuristic parameter estimation for continuous fermentation bioprocess which constitutes an application for biomass conversion into fuel, and therefore an opportunity for an industrial scale energy production alternative for Colombia.

The coordinator and guest editors of this issue hope that these works and the ones presented in the

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conferences help researchers to identify research trends and opportunities, and to strength the community in the fields of Industrial Engineering and Operational Research. Furthermore, we hope that works developed by members of this research community actually contribute to solve relevant problems in our context and to achieve a sustainable development.

References

[1] Depto. de Ingeniería Industrial. Universidad de Antioquia. (2017, Aug) CIIO IV International Conference Industry and Organizations. Universidad de Antioquia. Accessed Aug. 31, 2018. [Online]. Available: http://webcache.googleusercontent.com/search?q=cache:http://ingenieria.udea.edu.co/ciio2017/

[2] United Nations. (2015, Sep) Transforming our world: the 2030 Agenda for Sustainable Development. Sustainable Developmentknowledge Platform. Accessed Aug. 31, 2018. [Online]. Available: https://sustainabledevelopment.un.org/post2015/transformingourworld

[3] ASOCIO. (2017, Aug) II Colombian Conference on Operational Research. Accessed Aug. 31, 2018. [Online]. Available: http://asociocolombia.wixsite.com/asocio/actividades2017

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