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EDITORIAL

Proceedings of the First Vietnamese-French Joint Conference on Applications of Mathematics to Ecology, Bio-economics, Epidemiology and Health Care: Hanoi and Tuanchau, Vietnam, December 12–15, 2016

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The first Vietnamese-French Joint Conference on Applications of Mathematics to Ecology, Bio-economics, Epidemiology and Health Care was held in Hanoi and Tuanchau (Halong bay) in December 2016. It was dedicated to the use of modelling tools for sustainable development and developing countries issues in various fields, from biodiversity conservation to food production and disease control. Indeed, the United Nations identified in 2015 17 Sustainable Development Goals (SDGs) in order to end poverty, protect the planet and ensure prosperity for all, and proposed an agenda for the next 15 years. Vietnam is particularly concerned with the SDGs: major cities are rapidly expanding and need significant development planning, agriculture is flourishing but large areas such as the two major deltas (Mekong and Red River deltas) highly depend on access to water resources and are vulnerable to climate change or the increase of human activities.

Vietnam conducts a large number of research activities in order to monitor city development, to secure food production, and to improve the well-being of people. More specifically, the development of modelling tools and theoretical approaches is encouraged in order to correctly assess the needs and produce predictive tools that could be helpful for decision making. In order to achieve such goals, the country can rely on high quality research in mathematics and computer sciences, supported by institutions like the Vietnamese Institute for Advanced Studies in Mathematics

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(VIASM), whose scientific director is the 2010 Fields Medal Award Winner Ngo Bao Chau, and a tradition of cooperation with foreign institutions, and more specifically French universities or institutes such as IRD (French National Research Institute for Sustainable Development).

The conference was considered as the first activity in the context of the MoU (Memorandum of Understanding) signed between VIASM and IRD in September 2016. It allowed the participants to share the current state of the art in theoretical approaches related to a wide range of sustainable development challenges. Moreover, it was intended as a key event in order to promote scientific collaboration between the Francophone world and Vietnam as it involved several institutions such as IRD (and more specifically the modelling of complex systems research team UMI 209 UMMISCO), VIASM, the Société Francophone de Biologie Théorique (SFBT) and other universities and partners. It was followed by the creation of new local or joint research structures such as the young team WARM dedicated to water resources challenges, sponsored by IRD and the Thuyloi University (TLU, a vietnamese university specifically dedicated to water resources) in Hanoi, and the interdisciplinary laboratory about modelling and simulation of complex systems-MSLab (Modelling and Simulation Laboratory) within TLU.

This special issue shows a small panel of the topics presented during the conference and includes contributions in theoretical biology such as population dynamics (Sen et al., Aziz-Alaoui et al.), evolution (Bessonov et al.) and chemotaxis (Bouderbala et al.), but also in fields directly related to sustainable development, well-being and South countries priorities, such as epidemiology (Kolaye et al.), medical science and pharmacology (Stéphanou et al., Le and Nguyen-Ngoc) or agriculture and pest control (Ntahomvukiye et al.).

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