Trying to stabilize the population and mean temperature of the World

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Abstract

It is a fact that population and mean temperature of the world grow fast. Literature shows that many studies have been performed about it. Nevertheless, forecasts are not good. Assuming that the key implied factors are the consumption of energy (from the different types of energy sources) and the birth rate, we suggest in this research, as a first step, to state a stochastic demographic model, including the necessary and adequate economic, environmental and well-being variables. This model will be able to optimize, by means of a genetic algorithm, the amount and proportion of the main source types energy consumption as well as the average birth rate in the world, in order to maintain the global present population and mean temperature. The input variables to be optimized (control variables) are the consumptions of: coal, oil, gas, nuclear energy, and renewable energies, as well as, forest area and the birth rate. The scenarios in which to perform the optimization processes (non-controlled variables) are defined by the Human Development Index. The evolution of other variables such as, for instance, unemployment, carbon dioxide production, gross capital formation, water cycle, etc. is obtained as collateral information.

Keywords: global warming; energy consumption types; stochastic demographic model; genetic algorithm; optimization.

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Antonio Caselles has been the Vice President of the "Sociedad Española de Sistemas Generales" (SESGE), the Spanish Society for General Systems, which is a member of the International Federation for Systems Research and the European Union for Systemics. He has also been the Director and Editor of the "Revista Internacional de Sistemas" (International Systems Review), a publication of SESGE. Caselles is interested in the construction of logical-mathematical models which attempt to reproduce the structure and behavior of complex social, biological or ecological systems. These models, as computer programs, allow managers to simulate intervention strategies. He focuses on the automatic programming of computers including search functions that interrelate several variables (***data mining***). Caselles is the author of more than 100 articles published in scientific journals or as book chapters about systems theory and its applications to real-life problems, especially socio-economic, ecological and psychological problems. He has conducted diverse research projects with competitive public financing and has consulted with private companies and government agencies. He is the author of the books: ***Control del desempleo por Simulación*** **and** ***Modelización y simulación de sistemas complejos***.