



Transition to Renewable Energies: A Reality Check

by

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The transition to renewable energies (REs) appears to be the way towards a more sustainable world. The deployment of REs should alleviate our dependence on fossil fuels and abate the emission of greenhouse gases. But History and fundamental scientific principles reveal that this energy transition will be far more difficult than anticipated. Ten inescapable realities impede it. These barriers are: (1) the magnitude of the energy shift and its time scale; (2) the intermittency of energy supply; (3) the energy storage; (4) the deployment of smart grids; (5) the availability of strategic minerals; (6) the geography; (7) the energy density; (8) the power density; (9) the energy return on investment; and (10) the implementation of energy programs and policies. A thorough examination of these realities shows that REs cannot meet our present needs. The challenge is not to adapt REs to the world but to adapt the world to REs. The question then is to determine whether or not the world is ready to embark on such an ambitious journey.

Abridged biography



Dr. Lacroix holds a Bachelor's degree in physics, magna cum laude, from the University of Ottawa, a Master's and a Ph.D. in nuclear engineering from the École Polytechnique de Montréal. His professional career spans nearly 40 years in the public and in the private sectors, in Canada and abroad. He worked for Atomic Energy of Canada at the Chalk River nuclear Laboratories and for the Groupe d'analyse nucléaire, a consultant firm that conducts safety analyses for nuclear power stations. Dr. Lacroix has been a full Professor at the Université Claude Bernard of Lyon and at the École des Mines de France. He has authored and co-authored hundreds of peer-reviewed scientific papers and he has published several textbooks in thermodynamics, and popular books on energy and nuclear technologies. Dr. Lacroix is currently a full Professor at the University of Sherbrooke and a private engineering consultant for the power and process industry and for law firms. During his career, Dr. Lacroix held over fifteen invited professorships at foreign universities. He is a much sought after keynote speaker at international conferences as well as a public speaker. He appears regularly in the media across Canada for commenting on issues pertaining to energy technologies. In 2018, Dr. Lacroix was appointed as a Governor in Council permanent member for the Canadian Nuclear Safety Commission. Dr. Lacroix is a licensed nuclear engineer with the Ordre des Ingénieurs du Québec.