

OPTIMAL ENERGY MIX: A TOOL FOR JUDICIOUS USE OF ENERGY SOURCES TO MITIGATE THE RELATED PROBLEMS

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ABSTRACT

Today the world is on track for dangerous climate change, reached to an extreme limit having nearly lost room for further pollution in the mix of gases that make up the atmosphere. Despite a rise in clean, renewable energy supplies in certain countries, and a partial shift from coal to natural gas in others, global greenhouse gas pollution continues to rise at an increasing pace in the most recent years. Nations worldwide have to make major changes in energy supply, soon, if they are to restrain climate change to no more than 2 degrees Celsius. That is a threshold beyond which serious harm is likely to occur to human civilization as well as the natural world, as concluded by the IPCC and other's scientific judgements. Geo-engineering will probably also be required to solve the planet's global warming pollution problem.

To meet its energy needs, every country uses various energy sources available to it, in different proportions as single energy source is not sufficient to satisfy all the needs. The energy mix of an individual country is formed up by the contribution of their available resources. During the last decade, the establishment of proper energy mixes for countries has gained much importance, and energy drivers should enforce long term plans and policies. The structure of energy mix vary significantly from one country to another, fossil fuels dominate the energy mix at the global level, accounting for over 80% of the total. Although, every energy source has its limits, merits & demerits, if they are used in combination with balance proportion, the gravity of demerits can be reduced.

This paper evaluates energy issues the market and countries are facing today regarding energy mix, scheduling and panorama and seeks to improve methodology available that are applicable to optimal energy mix plan for the future. It covers the themes driving the future energy mix methodology proposal and estimation of energy supply & demand by mathematical model for selection of optimum variant and Key Factors identified, established and assessed through this paper for the common implementation. Those have a clear influence and are closely related to future environmental policies.

KEYWORDS: Energy Sources, Energy Mix, Key Factors, EROI, EROEI, Renewable and Non-Renewable Energy Sources, Multi-Criteria Optimization, Energy Supply Chains, VIKOR