

Can a rational use of energy save energy in Libya?

It has been estimated that the rational use of energy in Libya through utilizing more efficient appliances and lighting combined with improved behavior and energy management initiatives can save up to 2000 MW of installed capacity equivalent to burning 50 M barrels of oil [161].

What re technologies are available in Libya?

Existing utilization state and predicted development potential of various RE technologies in Libya, including solar energy, wind (onshore & offshore), biomass, wave and geothermal energy, are thoroughly investigated.

What is the potential of solar PV & onshore wind in Libya?

The average potential of solar PV and onshore wind over the Libyan territories amounts to 1.9 MWh/kW/year and 400 W/m, respectively. Notwithstanding, biomass and geothermal energy sources are likely to play an important complementary role in this regard.

How much energy does Libya use?

Electricity and gasoline represent the bulk of energy consumption in Libya [ ]. According to the International Energy Agency (IEA), electricity consumption in Libya was equivalent to 2580 kilo tonne of oil equivalent (ktoe) i.e., 2580  $\times$  10 kg in 2017- a figure that is greater than its counterpart of the year 2000 by a factor of 2.5 (1032 ktoe) [ ].

How efficient is power generation in Libya?

On the other hand, power generation efficiency in Libya is at the average of 28%, while losses in power transmission and distribution systems are at the level of 14% [168]. Therefore, efficiency of existing power generation and transmission infrastructure systems should be improved urgently.

Are there alternative energy options in Libya?

As the national Libyan energy plan was limited in scope focusing primarily on solar energy and onshore wind energy, this paper focuses the spotlights towards the implications of exploring other RE alternatives in Libya, so that decision makers and energy planners may revisit future RE strategies and implementation policies.

This research investigates the potential of utilizing existing dams in Libya as Hydro Pumped Energy Storage (PHES) systems. This paper demonstrates an effective approach to identify and assess suitable locations for establishing hydropower structures.

This paper highlights Libya's potential to achieve energy self-sufficiency in the twenty-first century. In addition to its fossil energy resources, Libya possesses favourable conditions for solar, wind, and moderate hydroelectric energy.

Advanced technologies critically needed to enhance energy security and improve the penetration level of renewables, including hydrogen storage and energy efficiency (EE), are elaborately discussed.

Seawater Pumped Hydro Energy Storage in Libya Part I: Location, Design and Calculations Abstract: This paper presents Seawater Pumped Hydro Energy Storage (PHES) in Libya. The study is divided into two parts, the first part discusses the location, design, and calculations.

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