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1. Most downloaded

EROI of different fuels and the implications for society

Abstract

All forms of economic production and exchange involve the use of energy directly and in the transformation of materials. Until recently, cheap and seemingly limitless fossil energy has allowed most of society to ignore the importance of contributions to the economic process from the biophysical world as well as the potential limits to growth. This paper centers on assessing the energy costs of modern day society and its relation to GDP. Our most important focus is the characteristics of our major energy sources including each fuel's energy return on investment (EROI). The EROI of our most important fuels is declining and most renewable and non-conventional energy alternatives have substantially lower EROI values than traditional conventional fossil fuels. At the societal level, declining EROI means that an increasing proportion of energy output and economic activity must be diverted to attaining the energy needed to run an economy, leaving less discretionary funds available for “non-essential” purchases which often drive growth. The declining EROI of traditional fossil fuel energy sources and the effect of that on the world economy are likely to result in a myriad of consequences, most of which will not be perceived as good.

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2. Recent Article

Turkey in the geopolitics of energy

Summary

This article discusses how geography, energy markets and political developments determine Turkey's role in the geopolitics of energy. Located strategically between two continents, Turkey has a desire of becoming an international physical hub and transit corridor for natural gas, while at the same time improving its own energy security. Domestic Turkish demand and market regulations, existing and new sources of supply, as well as internal and external economic, regulatory and political factors interplay in the realization of these goals. The article argues that the potential Turkey has to become a significant player in natural gas transit depends on the simultaneous developments of the domestic political situation and the great political uncertainties in its neighborhood. If market developments allow, Turkey may become a hub for Russian gas through the Western part of the country, and it may become a hub for gas from Central Asia and the Middle East while also serving its Middle and Eastern parts. The outcome depends on domestic decisions colored by the economics of natural gas transportation and political developments in its surroundings.

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3. Most Cited

Barriers to widespread adoption of electric vehicles: An analysis of consumer attitudes and perceptions

Abstract

Electric Vehicles (EVs) are promoted as a viable near-term vehicle technology to reduce dependence on fossil fuels and resulting greenhouse gas (GHG) emissions associated with conventional vehicles (CVs). In spite of the benefits of EVs, several obstacles need to be overcome before EVs will be widely adopted. A major barrier is that consumers tend to resist new technologies that are considered alien or unproved, thus, policy decisions that consider their critical concerns will have a higher level of success. This research identifies potential socio-technical barriers to consumer adoption of EVs and determines if sustainability issues influence consumer decision to purchase an EV. This study provides valuable insights into preferences and perceptions of technology enthusiasts; individuals highly connected to technology development and better equipped to sort out the many differences between EVs and CVs. This group of individuals will likely be early adopters of EVs only if they perceive them to be superior in performance compared to CVs. These results can guide policymakers in crafting energy and transportation policy. It can also provide guidance to EV engineers' decision in incorporating consumer preference into EV engineering design.

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4. Open Access Article

مقاله ی زیر بصورت کامل قابل دریافت و درصورت تمایل قابل ترجمه می باشد

Further considerations to: Energy Return on Energy Invested (ERoEI) for photovoltaic solar systems in regions of moderate insolation

Abstract

A paper by Ferroni and Hopkirk (2016) provided evidence that presently available PV systems in regions of moderate insolation like Switzerland and countries north of the Swiss Alps act as net energy sink. These findings were disputed in a paper (Raugei et al., 2017). Additional clarifications in support of our conclusions are explained, including mention of weak points in the argumentation by Raugei et al.

Our study is based on the concept of the extended ERoEI ($ERoEI_{EXT}$) for PV systems, knowing that this is not the mainstream concept in the Life Cycle Assessment (LCA), applying the Process-Based Life Cycle Assessment. The concept of the $ERoEI_{EXT}$considers many possible energy contributions needed for assessing the envisioned transition from fossil fuel to other types of energy sources and here in particular to photovoltaics in regions of moderate insolation.
The conclusions of our original study remain unchanged. Any attempt to adopt an Energy Transition strategy by substitution of intermittent for base load power generation in countries like Switzerland or further north will result in unavoidable net energy loss. This applies both to the technologies considered, to the available data from the original study and to newer data from recent studies

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