

Spanish solar energy: A model for the future?

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There is no free fuel. Whether you drill for and refine oil, or manufacture and maintain a panel to collect solar energy and convert it into electricity, it takes energy to make energy. In *Spain's Photovoltaic Revolution: The Energy Return on Investment*, authors Pedro A. Prieto of the Asociación para el Estudio de los Recursos Energéticos, and Charles A.S. Hall of the State University of New York, examine whether solar power can produce enough surplus energy to meet society's energy requirements in a sustainable manner.

To assess solar power's potential as a viable [alternative energy source](#), Prieto and Hall examine all energy inputs, which the authors refer to as "fossil fuel subsidies," at a massive deployment of [solar modules](#) connected to the [electricity grid](#) in sunny Spain. In an eye-opening analysis of the [Energy Return](#) on the Energy Invested (EROEI or EROI), the authors discover that solar power is not nearly as "green" as many believe.

Spain's Photovoltaic Revolution is based on Prieto's first-hand experience as Chief Engineer and consultant on several large-scale [solar projects](#) in Spain, and Hall's unparalleled experience – as the originator of the concept – in the application of EROI. Their analysis reveals the large fossil fuel subsidies that may remain hidden at various stages of the life cycle of a [solar plant](#), and, in fact, in nearly all aspects of today's economy. The authors also provide a breakdown of the EROI that must be met in order for different aspects of society to exist and flourish. These layers include the advanced functions of today's modern

civilizations, such as education, health care, and complex administrative and regulatory structures, as well as the most basic building blocks of any society, such as food production and transportation.

Prieto and Hall make it clear that while progress has been made, much additional work is required if solar energy is to be a key to significantly reducing our dependence on fossil fuels. The authors conclude, "As fossil fuel supplies dwindle, and the costs of bringing these fuels to market continue to rise, we may have one only shot at using the surpluses of the fossil-fuelled economy to find suitable alternatives. Following the precautionary principle, understanding the true EROI for society is essential before going massively into any alternative energy source."

The effects of diminishing energy returns from fossil fuel supplies can already be seen in the downward bend of economic growth curves in industrial economies. Whether there are viable alternatives that can sustain our way of life remains to be seen. Spain's Photovoltaic Revolution is an important book for anyone concerned with this future, and exposes the complexity of our energy conundrum in stark and revealing detail.

More information: Prieto, Pedro A. and Charles A.S. Hall. Spain's Photovoltaic Revolution: The Energy Return on Investment. Springer 2013. ISBN: 978-1-4419-9436-3 (Print) 978-1-4419-9437-0 (Online).

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