



THE SIMPLE TRUTH ABOUT SOLAR ENERGY. MYTHS AND REALITIES

enerdeal

smart
energy
today



THE SIMPLE TRUTH ABOUT SOLAR ENERGY. MYTHS AND REALITIES.

Presented by Enerdeal

Written by Francois Neu, Civil Engineer & Solar Energy Expert.

July 2015

INTRODUCTION

Solar power is one of the hottest topics in today's energy craving society.

In our search for additional and or alternative energy sources to fossil fuels as well as developing sustainable and environmentally friendly energy production processes there are many guru's and prophets.

Each may defend special interests or unidentified opportunities and as such may spread rumors and misinformation that may well suit their purpose. We've tried to identify some of the most commonly heard myths and objections for using solar energy.



POPULAR MYTHS

Misconceptions are often hard to defeat, especially with today's power of social networks, which has a tendency to proliferate and strengthen false assumptions. Myths can easily seem reality when accurate information and objectivity are lacking and remain unchallenged.

MYTH 1



"Solar energy is not profitable in our regions,
NOT ENOUGH SUN!"

MYTH 2

"It's better to **install huge solar power plants in the Sahara desert**; the environment is more adapted!"



MYTH 3

"Solar technology keeps evolving - it's still **too early to invest**; it's better to wait!"



MYTH 4

"I heard it is much **MORE POLLUTING TO PRODUCE SOLAR PANELS** than the CO2 savings they can generate afterwards"





“Solar energy is not profitable in our regions-
NOT ENOUGH SUN!”

THE TRUTH ABOUT LOCATION

Paradoxically, the profitability of solar power plants is not only linked to sun irradiation. Of course it is definitely part of the calculation but local electricity pricing and the usage



a company roof fitted with our solar panels.

consumption profile are equally important. In Denmark for example (perhaps not the most sunniest part of the world!), a retail mall was fitted with a rooftop solar power plant generating a subsidy-free payback in less than 10 years “thanks to” grid electricity prices which are among the highest in Europe.

On the other hand, in Abu Dhabi, definitely one of the sunniest regions of the earth, financial attractiveness of solar power plants is extremely weak or not even reachable because the local electricity price for grid connected companies is in the range of 0.03€/kWh (directly produced from local crude oil), while the so-called “Leveled Cost Of Energy” coming out of a multi-MW solar power plant reaches at best 0.06€/kWh.

In general, taking into account the consumption profile, solar energy is very much suited to industrial activity since both usually operate almost simultaneously, during daylight hours.



“It’s better to **install huge solar power plants in the Sahara desert**; the environment is more adapted!”



THE TRUTH ABOUT RETURN ON INVESTMENT

We often hear that a single solar power plant installed in a square of 100 km by 100 km in the Sahara would be enough to cover the whole electricity consumption of the earth. The Sahara desert offers indeed huge available spaces with great solar irradiation levels. But again, the attractiveness of a solar project is not limited to neither technical nor financial elements.



Which foreign investor consortium, country or even group of countries would be ready today to finance a multi-billion-Euro project in regions with such a high political instability, particularly knowing that a minimum 25 year economic life cycle of such a project is required? Which country or large corporation would accept to abandon its energetic dependency on a country or a project with such a limited strategic management capacity?

Additionally, production alone is not enough; transmission is a key factor as well. Supplying this solar powered energy to heavy consumers (mostly in Europe) generates prohibitive infrastructure costs and security issues on these strategic transmission lines. Realizing visionary projects is often very (too much?) complex, time consuming and require enormous financial resources. A well know example is the famous Desertec solar power idea, though initiated by a robust financial and industrial German consortium, which has already been quasi abandoned.





“Solar technology keeps evolving - it's still **too early to invest**; it's better to wait!”

THE TRUTH ABOUT TECHNOLOGY

You'll always find technically skeptical people keeping waiting rather than acting when considering an opportunity in a solar project investment. Among all renewable energy sources, solar power is probably the most mastered and available one.



Two key components constitute the basis of the performance: solar panels which transform the sun irradiation into DC current (physical process discovered in 1839 by the French scientist Henri Becquerel) and the inverters which transform the DC current into AC, getting it useable for all domestic and industrial applications.

Regarding panels, crystalline technology (mono or poly) is the most widely used for the production of the cells. Already in 1958, the Vanguard1 satellite was sent into space fitted with such crystalline cells. Over the last 15 years, cells efficiency has been increasing but only to a very limited pace, coming from an average of 14% in 2000 to a maximum of 19% in 2015.

Regarding price evolution, a strong price drop took place 3-4 years ago thanks to the increase in production capacity and sales volume but a bottom level seems to have been reached both in Europe and in Asia for the coming years, after the numerous bankruptcies of panel suppliers who sold below their production costs.

Only a few additional percentage cost improvements are to be expected for the years to come, and to a much lesser extent than formerly. Several other technologies are either in early-phase operation or still in laboratory stage (thin films, organic cells...) but





“Solar technology keeps evolving - it’s still **too early to invest**; it’s better to wait!”

no technological breakthrough is really expected to provide an attractive performance-price level at industrial stage before several years.

On the inverter side, average efficiency levels range around 97-98%. This means the potential for obtaining improvements is quite limited. Still dominated by European suppliers, this very mature market seems however to progressively move towards Asian suppliers, more competitive in electronic products with mass production (such as it has been the case for computers and cellphones).



“I heard it is much **MORE POLLUTING TO PRODUCE SOLAR PANELS** than the CO₂ savings they can generate afterwards”



THE TRUTH ABOUT EMISSIONS

Finally, on the pollution aspects, a good understanding of the production process and transportation impacts will help to better address some other misconceptions.

A solar panel is essentially made of glass (produced out of silicium, the second most available raw material on earth), aluminum (completely recyclable too) and solar cells (silicium-based). It is of course the cell which is the key element of the panel, and which represents 60% of its total cost.

To date, 95% of the cells contained in all the panels assembled in the world come from Taiwan, kingdom of mass produced electronic products. Whereas for transportation, coming from Spain or Asia, the CO₂ emission level per kg of transported product is substantially the same because sea freight in 40-foot-long containers is the least polluting means of transportation in the world (in relative value of course!).

Taking into account these different elements allows therefore to easily compute the so-called “grey energy” level necessary to produce a solar panel, which, with a life-time of 25 years (performance level guaranteed at 80% for the first 20 years) reaches one and a half year of solar production (for comparison, this is well below the grey energy payback of a nuclear power plant – a heavy user of concrete for its construction). In short, solar calculates very favorably in terms of low CO₂ emissions.



THE RIGHT TIME FOR SOLAR IS TODAY!

Enerdeal is specialized in large scale photovoltaic power plants for either on-grid systems in Europe as well as off-grid stand-alone or hybrid installations in remote areas such as Central Africa.

With over 300.000 m² of solar panels installed, Enerdeal has become a major player in the solar energy market. Since we offer a fully integrated solution from audit to installation, maintenance and optimization to 0% financing and third party investment, Enerdeal is uniquely positioned to help companies and investors develop solar energy plants for industrial, commercial, real-estate projects.

Get in touch with Enerdeal today.
We'll be happy to discuss opportunities for your location.

CONTACT US

©2015 All rights reserved.