About the Social Profit of Sustainable Energy

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Abstract- The article shows that the present worldwide production of sustainable energy is negligible relative to the worldwide need of energy. As a result, increasing the production of sustainable energy, in order to try to reduce CO_2 emissions, will not have any significant effect. Only one measure will do. However such a measure will not be received as a popular one.

Introduction

Generating sustainable energy can have two kinds of profit: a financial one, in general for the owner and a social one, in general for the society. This article only considers the social profit, which is defined as the extent to which sustainable energy helps to reduce/stop the heating of the world. Three types of generating sustainable energy will be considered: by means of sun cells, wind mills and using earth heat, denoted by: sun energy, wind energy and earth heat energy, respectively.

The worldwide energy consumption

Global administrations of the consumption of fossil fuels has led to a graph (figure 1) of the annual energy consumption in the past 200 years [1].

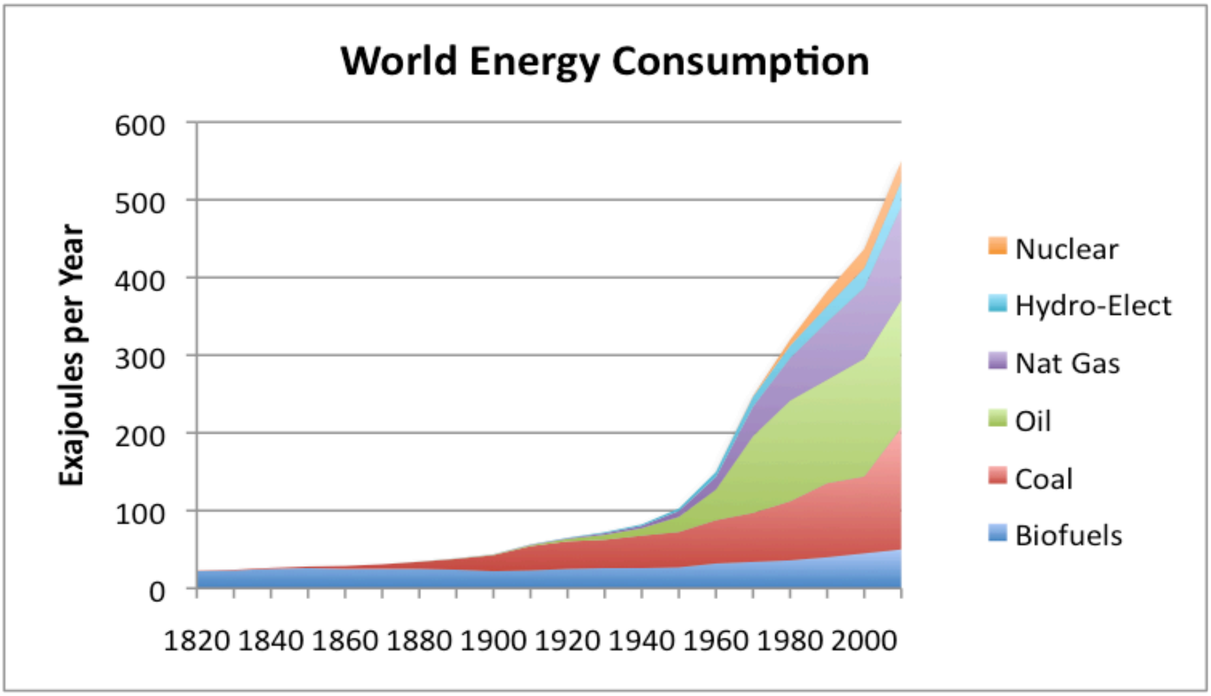

Figure 1. World Energy Consumption by Source, Based on Vaclav Smil estimates from Energy Transitions: History, Requirements and Prospects and together with BP Statistical Data on 1965 and subsequent

The applied variable "ExaJoules per Year" effectively is a power: Joule expresses energy and energy per time unit expresses power.
Therefor the shown 600 ExaJoules per Year equals ~ 20 TeraWatt. "Tera" means 10^{12}.

Sun energy

The net electrical power generated by means of sun cells is 15 Watt per square meter of these sun cells. Experience learns that a mean household of 3 persons in the prosperous part of the world can generate its own need for electrical purposes by means of 20 m^2 of sun cells. The heating of the house excluded. Including the heating would result in about 50 m^2. But mounting 50 m^2 on the roof would require a rather large house, which would need again more energy to heat it. So heating the houses with sun energy is considered impossible.

The need for electrical energy of the meant mean household can be compared to the fictive situation of *continuously* burning a bulb of 300 Watt, so a 100 Watt one per person.

The prosperous part of the world population is roughly living in Europe, North America and some other countries, together with a much lower population than the two other ones. Totally 1 billion persons, presented as a rounded number. These one billion persons need 100 times 10^9, so 10^{11} Watt power, for their household. 10^{11} Watt equals 0.1 TeraWatt.

This result shows that we have to conclude that the prosperous part of the world needs only a negligible fraction of the total required power for their household. *Each* household would need these 20 m^2 sun cells on their roof in order to generate this power themselves. This will never happen, so the total amount of ever own generated energy by means of sun cells will be even much lower than 0.1 TeraWatt.

If so many square meters of sun cells would be mounted worldwide that its contribution to the total need of energy would be significant, than the landscape would be destroyed worldwide significantly.

Conclusion: the social profit of sun energy can never be of any importance.

Wind energy

The drawing in figure 2, effectively copied from the source: Renewable Energy Policy Network, 2015 © REN2 policy network, shows the total power capacity of the worldwide generated wind energy. Suppose in 2017 this will be 500 GigaWatt.

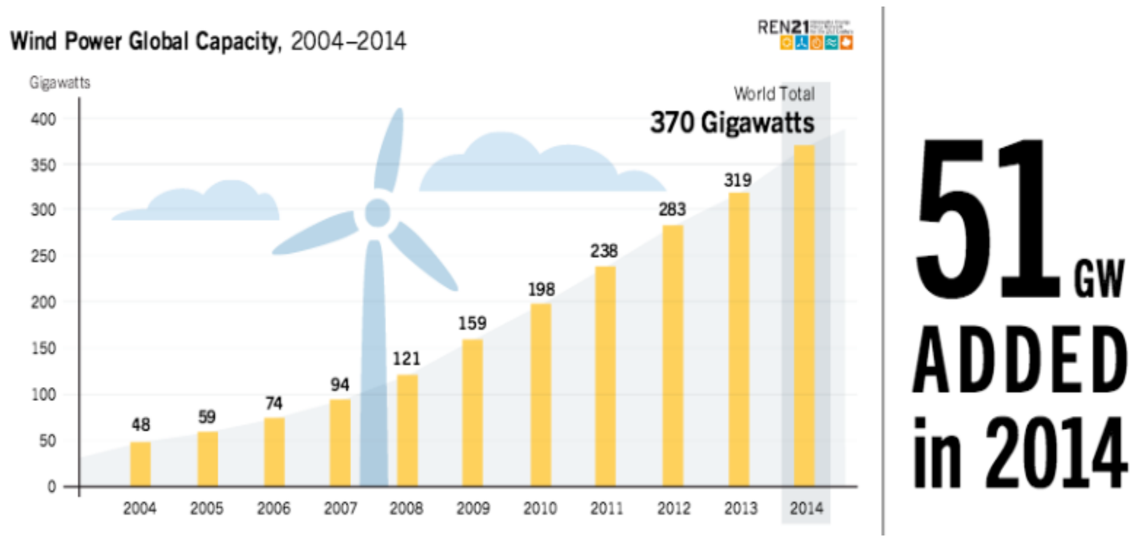

Figure 2

The word "capacity" means that this is the highest power that can be generated with the turbines installed. The generally accepted net power is 20% of its capacity, so 100 GigaWatt. Expressed in TeraWatt: 0.1! Again completely negligible relative to the worldwide need of about 20 TeraWatt at this moment.

From the references [2], [3] and [4] it can be deduced that, in the past 20 years, each growth of the world population with 1 billion humans resulted in an increase of a worldwide needed power of 2.5 TeraWatt. From these references it can also be concluded that this will be continued the coming 20 years. See table in the appendix. The table shows that in 2035 the world population will be 10 billion, if no measurements have been taken in the mean time to stop this growth. So in 2035 the needed power will be 26 TeraWatt.

A growth of 6 TeraWatt in 20 years, so 0.3 TeraWatt/year.

This prediction shows that the expected growth of net wind power (20% of 50 GigaWatt = 0.01 TeraWatt/year) will not be able at all to compensate for the growth in required power.

Conclusion: the social profit of wind energy can never be of any importance.

Earth heat energy

Suppose the mean family worldwide consists of 3 persons and suppose each family needs a power of 500 Watt to heat its house. As soon as the world population would be 9 billion, the required total power to heat all the houses on the world would be 500 times 3 billion watt. That is 1.5 TeraWatt, relative to the worldwide need of 23 TeraWatt at that time.

So even in the most extreme, and at the same time most unrealistic, situation that each house on the world would be heated by means of earth heat energy, only a negligible part of the worldwide required power would be generated by such a kind of sustainable energy.

Conclusion: the social profit of earth heat energy can never be of any importance.

Conclusion

Not even the total of the three types of considered sustainable energy productions would ever be able to compensate significantly for the worldwide need for energy.

Figure 1 expresses already implicitly this conclusion: no sustainable energy production is shown, because it is not possible to make it visible.

Political oriented Encore

Whether the climate problem is correctly represented by a greenhouse or a living room model [4], or whatever model, this problem is noting more than a symptom of the very serious "disease": the explosive growth of the world population.

As a result only one measure will help to stop the increasing global temperature:
stop the growth of this population.

References.

[1] https://ourfiniteworld.com/2012/03/12/world-energy-consumption-since-1820-in-charts/

[2] The Relation Between CO_2, Global Temperature and World Population: http://vixra.org/abs/1601.0313

[3] Relation Between Co2, Global Temperature and Energy Consumption: http://vixra.org/abs/1610.0091

[4] Greenhouse Versus Living Room Model: http://vixra.org/abs/1612.0392

Appendix

Year	Population (billion)	TeraWatt/ billion people	Year	Population (billion)	TeraWatt/ billion people
1810	0,69	0,85	2009	6,74	2,51
1820	0,73	0,94	2010	6,84	2,51
1830	0,78	1,04	2011	6,95	2,52
1840	0,84	1,14	2012	7,05	2,52
1850	0,90	1,24	2013	7,16	2,52
1860	0,99	1,35	2014	7,27	2,53
1870	1,08	1,45	2015	7,38	2,53
1880	1,20	1,56	2016	7,49	2,54
1890	1,33	1,66	2017	7,61	2,54
1900	1,49	1,76	2018	7,72	2,54
1910	1,68	1,86	2019	7,84	2,55
1920	1,91	1,95	2020	7,96	2,55
1930	2,17	2,03	2021	8,08	2,56
1940	2,48	2,11	2022	8,21	2,56
1950	2,85	2,18	2023	8,33	2,56
1960	3,28	2,25	2024	8,46	2,57
1970	3,78	2,31	2025	8,59	2,57
1980	4,37	2,37	2026	8,72	2,57
1990	5,07	2,42	2027	8,86	2,58
2000	5,89	2,47	2028	8,99	2,58
2001	5,97	2,47	2029	9,13	2,59
2002	6,07	2,48	2030	9,27	2,59
2003	6,16	2,48	2031	9,41	2,59
2004	6,25	2,49	2032	9,56	2,60
2005	6,35	2,49	2033	9,70	2,60
2006	6,44	2,49	2034	9,85	2,60
2007	6,54	2,50	2035	10,01	2,61
2008	6,64	2,50	2036	10,16	2,61