

On Efficiency

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Abstract

This work tries to enrich the debate over the economic viability of a massive switch to renewable energy sources focusing on the efficiency issue. This particular point of view is mainly structured over a revision of some concepts assumed as given when talking about efficiency. Not considering environmental commodities in efficiency equations blocks the development of renewable energy sources. If we want to develop renewables, environmental commodities must be taken to account to make them competitive. The suggestion is that the magnitude of the valuation of environmental commodities should be that which makes renewables cheaper than conventionals.

Keywords: Environmental valuation, consequence based analysis, renewable energy sources,

The eternal question about how do human beings want to live, is nowadays particularly concerned by another question. This other question is how should energy be handled. The fact is that our actual hegemonically capitalist world needs increasing amounts of usable energy for its reproduction. This raising demand for usable energy is being mainly satisfied by the massive exploitation of fossil hydrocarbons. These practices have devastating consequences for the environment, besides that sooner or later there will be no more fossil hydrocarbons left.

Some of us are not pleased with this situation which implies severe environmental damage, apart from other not least important consequences which I will not discuss here. So what is left for human actions aimed towards change? A few years ago, Deleuze and Guattari published a book, called “A Thousand Plateaus: Capitalism and Schizophrenia”, which might be a useful excuse or starting point. Vastly interpreted, their book worked on, among others, the concept of state in an extremely broad sense, almost counter intuitive. In just a few words, the state was interpellated as a determined order which hierarchically structured human relations, mainly trying to normalize deviated activities, its main threatens. This state of things, not only legal, economical or institutional, but cultural as well and mainly political, rejected not state-centered practices. These are practices not oriented towards the established order, even to threaten it, but attempts to build alternative, or parallel, ways of living, without conceiving the state as an unavoidable instance. Due to the richness of its resources, not only material, the state is usually successful in this re-centering quest, although it is not absent its internal conflict between violence and order. That politics are in the first place was one of Deleuze’s and Guattari’s postulations connected with framework.

In these terms, what can we, the ones not pleased with the actual state of things, do? A non state centered action does not seem likely to revert or diminish the increasing deterioration of the environment.

The strength and depth of the social dynamics that converge to support fossil hydrocarbons as dominant energy sources do not seem weakened by not state centered actions. I will not argue further in this sense, although susceptible of discussion.

My objective is merely to state that I believe that only state centered actions are suitable for reverting the present erosion process of the environment.

After settling these grounds, the question on the energy issue turns towards the concept of efficiency. The deeply entangled social dynamics that support fossil hydrocarbons, are, in this capitalist context, guided by the concept of efficiency. So if we want to influence this social process we must present an alternative able to compete at this same level with this criterion: efficiency. Only a more efficient alternative will be able to twist the actual course of energetic matters. But what does efficiency mean here?

Roughly, we can assume “efficiency” as the attainment of a good through the least possible cost. In this sense we can talk about levels of efficiency, where high efficiency means low costs in the achievement of the good, and low efficiency means high costs. A fisherman for example, or better a fisherwoman, could be evaluated in these terms. Considering the time spent fishing, against the number of fish caught, the most efficient fisherwoman would be the one who had the higher rate of fish caught per hour. At this point we must have in mind the concepts of cost and benefit, or the desirability of particular consequences attached to a determined origin, are socially constructed⁶. In other words, these assumptions lie over a consensual basis which is preferably not to be taken as objective. We will see further the foundations of this suggestion. A very reasonable argument in this sense could be that the time spent fishing is not a cost but a benefit, because it is enjoyed by the fisherwoman.

When referring to an energetic system we also speak in terms of efficiency. But in this case the consensus over the concepts of costs en benefits is much wider, making debate on a common ground easier. The efficiency of an energetic system is measured by considering the energetic output in comparison to the input provided by the source. In other words the rate between the energy actually provided by the system and the one contained in the source. In this way we are able to state that the efficiency of an internal combustion machine rounds 40% or that the efficiency of PEM fuel cells can go beyond 70% taking into account thermal and electric energy. Once input and output energy are properly quantified there is no trouble in defining the efficiency of the system. The simplicity of this kind of models lies in the fact that we are measuring the efficiency of the system just in terms of energy.

Something similar happens with investment in a market economy. The market assigns prices. Investment decisions are guided by these prices, looking for the most efficient revenue. That one which has the highest return rate per monetary unit invested. This criterion is overriding in a capitalist economy, and illustrates the unavoidable condition of increasing efficiency that any alternative must show if it expects to influence the present way of obtaining, distributing and using energy, within the rules of a market economy. So in a capitalist context efficiency means capitalist efficiency.

As we have just seen, in these two concepts of efficiency, investment in a market economy and efficiency of energetic systems, their simplicity is granted by the easiness with which cost and benefits can be assessed and measured. In the case of investment settled, by the price system provided by the market, and in the case of energetic efficiency by the scientific instruments that provide accurate measures. But many interesting questions take place when we try to infer the efficiency of more complex models, especially when any of the variables is not measurable.

When we broaden the concept of efficiency by adding more variables we might confront the problem of measures.

Many variables can not be measured in order to be placed in the cost/benefit equation of efficiency. This situation applies especially to environmental issues. If we add, for example, environmental harm variables as costs to the efficiency equation of fossil

⁶ A good starting point for deepening in this debate could be Wolff, 2002.

hydrocarbons as energy sources, we will find that we are not able to assign objective values to several items. Scientific experiments can show that the CO emissions produced by hydrocarbons combustion contribute sensibly to the reduction of the ozone layer. Now, how can we measure this cost? Which is its value? This problem is extensive to all those costs/benefits which are not valued in the market and cannot be measured experimentally neither. The same happened with the joy provided by fishing to the fisherwoman. The dynamic of the market assigns prices to all interchangeable goods. When goods are out of the reach of market, there is no firm starting point to talk about measures, and therefore of efficiency.

Against this problem of the uncertainty of the value of determined costs and benefits there have been several attempts to value them without bias. Since the second post-war different theoretical devices and techniques were created aiming towards an objective valuation of this issue. They were mainly focused on a hypothetic extension of the market. The question they tried to answer was how the market would value these goods if they were to be interchanged. These efforts were activated by a growing consciousness about environmental deterioration, and were mainly applied to environmental valuation concerns. These extrapolations between and imaginary environmental commodities market, and the valuation of a determined environmental good, as the ozone layer for example, were widely criticized⁷. The supposition that environmental issues could be categorised as pure consumer choices or the endeavour for a rational valuation unbiased by subjectivity and ethics, where two strongly criticized postulations.

As I anticipated some paragraphs ago, I do not try to show the impossibility of a procedure neutral assessment of environmental commodities. Although I understand this to be unachievable, I just want to propose the convenience of leaving this aim aside. Criticizing from the *inside* the different techniques used to identify consumer preferences towards environmental commodities, distracts our focus from the consequences that this valuations have. The debate over the improvement of the processes used to obtain unbiased valuation of environmental issues, leaves aside the aspect in which I want to emphasize: the practical consequences of this attached magnitudes of value.

This is the reason for the suggestion of refocusing on the practices that a determined valuation encourages, instead of the strictness of the formal process through which *unbiased* values of environmental commodities are acquired. At the beginning of this essay we interrogated the problem of action oriented towards change, specifically in the energy area. The fact is that, strictly in market terms, fossil hydrocarbons are more efficient than renewable energy sources. Fossil hydrocarbons are cheaper. Now, this narrow efficiency assessment which leaves outside all non interchangeable goods works in the opposite direction of the development of renewable energy sources. Evidently, the magnitude of the valuation of environmental commodities and its translation to market are insufficient for the development of renewable energy sources, as they do not raise their efficiency to competitive levels.

So if we face this problem from the pragmatic side, how to affect the way in which energy is presently obtained, distributed and used, the task is making renewable energy sources more efficient in market terms, making renewable energy sources cheaper.

In the first place, environmental costs and benefits must be included in the efficiency equation of energy sources. In a market economy this means that these costs and benefits must be monetized, they must be assigned with prices.

As we have seen, environmental valuation efforts are targeted in this direction, but are insufficient for developing renewables. If we can leave aside the aspiration of an unbiased

⁷ Interesting points of view in this sense can be Svendsäter, 2000, and Navrud et al., 1997.

valuation, and focus on our pragmatic objective of making renewable energy sources competitive in market terms, the magnitude of the valuation of environmental cost and benefits must be that which makes renewables cheaper. From this point of view, there is a hierarchical inversion from the conventional approach than fossil hydrocarbons. The social consequences of environmental valuation are the proposed pattern to measure its values.

In second place, this valuations based on their sole social consequences must be translated into the market. In this sense, legal and institutional resources might be interesting instruments to make environmental costs and benefits relevant in the social dynamics of market. What instruments are most suitable for each situation, as for example taxation or subsidies, is a much wider theme which I will not elaborate here either⁸. Anyway, a large consensus over this consequence based valuation of environmental commodities is a prerequisite for any action in this path.

This consensus is fundamental. To picture the situation, we could say that the capitalist market subsidizes all consumers as it does not take to account environmental costs. These environmental costs can only be forced into capitalist efficiency equation through a consensual basis. Regional consents over the growing danger of the environment are indispensable. This conceptions of the importance of preserving the environment fall as well in the dynamics of social construction, so they will be as well a matter of intersubjectivity. Energetic efficiency must also play a very important in this aspect. The enhance of energetic efficiency of energetic systems that use renewable energy sources as supply will also help in settling them in the same ground.

As a final reflection, I would like to underline some concepts. As I said before, the idea of considering environmental valuation magnitudes based on their own consequences, is a pragmatic proposal derived from the previously settled desirability of the replacement of fossil hydrocarbons as main energy sources. The narrow efficiency assessment that capitalist markets provide is functioning against the development of renewable energy sources. At this stage, settling the efficiency of a certain energetic system implies necessarily a consensual basis for incorporating environmental commodities in its equation. The cost of damaging the ozone layer should be that we agree it is in order to make ozone layer inert energy systems competitive. At this moment there is a growing conscience about the increasing magnitude of this kind of costs. Nonetheless this consensus is yet not strong enough so as to influence decisively the actual course of narrow efficiency assessment of energy systems. As long as we keep ignoring the non interchangeable goods which are destroyed by the use of conventional energy sources, renewable energies will not be able to take off.

⁸ An interesting approach could be Pearson, 2004.

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