

SOCIETY'S RESPONSES TO THE CURRENT PROBLEMS OF ENERGY AND ENVIRONMENT

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1. Adjusting to changes in the energy and environment scenario of the next two decades is a huge and complex challenge; there is a need for the political and economic elites to be both radical (to provide direction) and realistic (to be sensitive to people's immediate concerns with growth and consumption).

Oil as well as other fossil sources of energy cover about four fifths of world energy needs today, and they will do the same for some time to come. Given growing demand, gains in efficiency and conservation will be eaten up by higher consumption per capita.

Renewable sources of energy will increase their production and gain importance, but the transition to a low carbon economy will be gradual. At the same time, nuclear power will make a comeback, at least, in some countries, but, again, this will not change much its relative weight in the final energy mix.

So even if more care is taken of the environment, and some changes in the lifestyle of the population of the developed, and developing, world are made, for the here-and-now of the next two decades there will still be a large amount of continuity.

And yet, changes are in the horizon. The signs are on the wall for all to read, as in Belshazzar's feast, even if Babylon is not going to fall tomorrow.

The changes are pushed by four factors: prices are set to increase, mostly driven by demand; geopolitics will be problematical, and times of political turbulence will be recurrent; sensitivity to climate change, high already in the developed world, may intensify; and then there will be the cumulative effect of science, technology and innovation, which, coupled with the expectation of increasing financial gains, will help to develop carbon capture and storage, and to make renewable sources of energy ever more attractive (letting aside other changes in nuclear power and fossil fuels).

Thus, the political and social environment to policy debates and to social adjustments to the energy problems of the next twenty years will be quite different from the one of the 1980s through the 2000s. It will make less likely (but not impossible) a strategy of muddling through the events (merely allowing for some additional drilling, waiting for the prices' escalation to slow down, making ad hoc arrangements with semi-friendly governments to insure the flow of supply, increasing capacity of existing nuclear sites,

delaying other decisions) which would end up in a fallback to a variant of the statu quo ante — as it tended to happen, grosso modo, in the period after the oil shock of the 1970s.

All this poses a huge problem of keeping the boat on course: a problem of direction, but also of political prudence to meet the problems of the day -- therefore, of governance, for the next decades. At several levels: global, national, and in the case of Europe, supranational.

2. The challenge cannot be met by politicians and the industry (and markets) alone; there is a need for the public's sustained support. This, in turn, requires a public which is informed and understanding of the issues.

The problem will have to be tackled by politicians, in some sort of dialogue with the industry — and the record shows the difficulties they have in the US as well as in Europe, to articulate, and implement, a policy in the long run.

But this cannot be done by politicians, with the industry, all alone. They need to take society on board — as it is bound to have a crucial say on the matter. Society in its different guises: citizens able and willing to debate and share in decision making and to live with the consequences of the adopted policy; members of a civil society of associations of all kinds; as well as consumers.

In order to follow and to participate in the debate in a discerning manner, and to make sensible adjustments in their personal lives, the public needs a modicum of information, and of understanding of the issues.

3. The problem is that, even though people express an interest in these issues, they don't feel informed; and to a considerable extent, they are not. Maybe there is a deficit of information and understanding; maybe, a deficit of real interest. Whatever the case, the result could be a fair amount of public 'non-opinion'.

Judging by what we know on the face of survey evidence in many developed countries, the public's information and understanding of these issues is rather limited.¹

The fact is, people express a rather strong interest in these matters, and say they follow the news with great interest. Also, they have been expressing that interest for a long time, say for ten years by now.

At the same time, however, they feel they are not well informed on these topics -- and in fact, they are not.

So we may suspect something is missing.

On the one side, maybe they don't feel informed because they don't quite understand the information they get. And we may even speculate this is because the media, the school and the political debate don't frame the issues in ways that make them well understood: they don't provide background information and don't update it, and don't make the necessary connections with other collateral issues; or maybe they sound too dramatic or too partisan.

On the other side, maybe it's just that people are not *that* interested. They don't look after more and better information, don't think these issues through, don't talk among themselves about them, don't participate in debates on these issues; and, on top of that, maybe they just don't make the connection between what they think and what they do, their opinions and their actual behavior.

¹ As suggested by a series of surveys which have been conducted in many countries for the last decade. Variations are considerable, and I'll focus on the general picture while restricting most of my comments to the European scene. Since I've done most research on a particular country, Spain, I'll use some of the Spanish evidence to illustrate my argument; but, on the whole, Spain tends to be fairly close to the average country of the EU-27, and where it does not, I will point it out (more details in Víctor Pérez-Díaz and Juan Carlos Rodríguez, *Energía y Sociedad*, Club Español de la Energía, Madrid, 2008).

Now, in either case, either for lack of information and understanding or for lack of interest, the implication is that they cannot have a serious opinion and a consistent attitude on the matter, but rather light and superficial ones.²

Thus, we may be dealing, to a significant extent, with superficial and light opinions and attitudes -- or, to put it simply, and to a significant extent, with 'non-opinions' and 'non-attitudes'. 'Non opinions' in that they are backed by neither enough solid information or evidence, nor by coherent and sustained thinking. 'Non attitudes' in that they do not correspond to actual behavior, habits, and therefore, to real dispositions to act. People's statements could be seen, then rather as signs of identity and status, of belonging to a group of reference -- in the sense that 'good responsible people should harbor these identity badgers'. They may be signs of lack of clarity of mind and cognitive inconsistency; hence, people's systematic lack of attention to the details, to the principle of reality.

An alternative explanation (or, rather a complementary one) is that these non opinions and non attitudes may reflect people's ('rational') choice not to make an investment of time and energy, since they may believe their individual positions are not going to have much weight on the aggregate outcome.

In either case, we may end up with a view of energy as a 'transcendent public good'. 'Public': since access to it cannot be restrained to anybody. 'Transcendent': since it may be treated as if nobody (certainly, not the public) would be responsible for it — it would come from 'the system': from an alien entity. This makes for a fuzzy situation in which no lines of responsibility would be clearly drawn between producers, distributors, intervening authorities and consumers of this good.

² Of course, there are important variations among countries; for instance, in Scandinavian countries the situation seems different, the interest may be more genuine and the level of information, higher.

4. The evidence is mixed about the public' level of information and quality of reasoning on these issues, but, in the main, it points to a rather low level of information, and to significant biases and inconsistencies in that reasoning — regarding climate change, oil dependency, economic costs, the role of science and of politicians, and other matters.

There is a diffuse awareness of climate change, and, in general, *the environmental debates* have become more salient — but here there may be less (and no more) than meets the eye. They have been in the forefront of the debates of international congresses and committees, the media and the academia -- mainly (not only) elites and professional debates. Most people have tended to nod approvingly, move gradually to accept that something had to be done, embrace lofty goals to be implemented on time — but people have taken for granted there would be a delay in their real implementation, which wouldn't be too costly when it comes to them, and with a vague expectation that somehow, something would come out to solve everything, with no much cost and sacrifice, at the last moment.

True, however, that, as of today, *most people believe climate change* is for real. And that it is, to a large extent, the result of human action, and in particular of the greenhouse gas emissions — mostly of carbon dioxide coming from the combustion of fossil fuels. So that people assume cuts, and important cuts, in those emissions will have to be made. At the same time, the chain of causality is unclear. Thus, for instance, the topics of the ozone hole and the greenhouse effect may get confused in the public mind -- in fact, in Spain, two thirds of the public believe they are about the same; and they have been living with this misconception for the last ten years, with no changes (67/68 p.c. believed it in 1997, the same percentage in 2007 — with about 20 p.c. who didn't know, didn't answer: the same both years).

It's relatively frequent for people to focus mainly, or only, on three energy sources when the time comes to put responsibility and blame for *all sorts of environment harm*. Carbon, oil and nuclear are the three culprits — for everything including waste and air pollution. What's at work here is an availability heuristics that, in the absence of information, takes on whatever comes ready to mind, and therefore, takes on the 'usual suspects', the familiar ones — without further discern and discrimination. Thus, for instance, nuclear is seen by many as responsible for air pollution.

Most, or at least, many European countries are aware of a *strong dependency on imported oil* -- and the risks associated with it. But not many people have a sense of the order of magnitude of that dependence -- and many *vastly underestimate it*. In Spain, for instance, about 70 p.c. underestimate the degree of dependency; and only 10 p.c. make a reasonable guess about it.

However, people may have a diffuse idea about which are *the countries they are dependent on*. Thus, for instance, when the time comes to identify the countries Spain is dependent on, most people have no more than a vague idea of the matter beyond a general attribution of 'great importance' to the Middle East countries. The rest is rather confuse. In Spain, to stick to this example, many people mention the US, and, of late, Venezuela — while in fact there is no oil coming from the US, and not much from Venezuela. But these countries make news in relation to energy matters in general -- again, they come ready to mind when the subject is raised, and, in absence of knowing, they can be referred to as plausible candidates for the providers' list.

People don't know ever *grosso modo* the *relative importance of various energy sources* in the total supply for domestic consumption. In Spain they overestimate the current contribution of solar and wind (and water) power, and underestimate that of coal (and gas). Interestingly enough, solar and wind (and hydroelectric power) are supposed to have no greenhouse emissions; and coal, by contrast, to have important emissions effects.

About the distribution of energy consumption for *different uses*: they tend to overestimate industrial uses and to underestimate transport. Maybe what's at stake here is that, given the subtext of most public questioning about energy and the environment, namely that of a search for putting the responsibility and blame for an excess of consumption or a contaminating behavior on somebody, people tend not to see so much the energy they themselves consume (in transportation) as they see the one the industry makes use of -- thus, reducing part of their own responsibility, and putting a greater part of the blame on others.

Costs of energy fluctuate, as they do now. But still it's safe to say that in the public mind, at least in some countries, possibly in many of them, there has been *a mismatch between real costs and perceived costs*. The public has tended, so far, to think nuclear is relatively more expensive than it is, and renewable energies are much less expensive than they have

been. Here there are two points to make. First, the specific mistakes made at every single moment are significant in and by themselves, of course. But, second, and above all, the mistakes illustrate the tendency of the public not to look closely at the matter. They may suggest a lack of concern with the principle of reality -- in that they may take their wishes for reality (and expect their dreams come through like in the movies, at least those of the 'good old days'). We might say, they anticipate the future — but seem forgetful of the intermediate steps, and the arduous tasks of discovery, innovation, investment, not to speak the political risks, involved in the process, and the corresponding costs.³

Just a corroborating detail on the lack of concern with the details of the cost, and price, of energy: most people seem not to be able to have a realistic estimate of *the part of taxation* in the price of the gasoline they use on their cars. In Spain, certainly, 80 p.c. don't.

In fact, most or many people tend to think the environment should be *protected at all costs*. No matter which costs: 58 p.c. vs. 38 p.c. who think costs should be considered. The implicit assumption is, costs are not that important -- as if we would be able to shoulder them, to live as in the past and continue the life-style we have.

On the other hand, people act as if costs were really important when they come to touch them *in person*. In fact, they are *not ready, and not willing, to pay higher prices or taxes* for renewable forms of energy — most are ready to pay nothing at all, and only one fifth to pay no more than an increase of about 5 p.c.

Or maybe they just displace the problem of costs to 'someone else'. So they think the state will foot the bill *by means of subsidies to firms and consumers* (for them to make a better, more efficient use of energy, for instance, or switch to cleaner energies). But people do not seem to make the connection between state's spending and the taxes that make that spending possible.

At the same time, even though the state is expected to play a key role, people display an ambivalent attitude to politics. They may welcome specific state regulations (improving

³ Of course, an alternative (or rather, complementary) explanation is that people don't expect their understanding of the matter, and eventually the position they may take, will count for much in the final outcome, and therefore it does not make much sense for them to invest much time and energy in learning about it (see *supra*).

standards of efficiency, for instance), and even be resigned to higher specific taxes to polluting industries. However, at the same time, people *don't trust politicians*, and the political parties, when they come to that (they don't trust the firms either). They think political parties don't take the matter of environment, and energy, at heart, and use these issues just with an eye to gain elections and advance their own positions.

Maybe, the neglect of costs mentioned above is linked to a vague expectation that *research, science and technology* will solve all the problems, in due time. There may be something of that among the more or less articulated, background assumptions of most people in advanced societies. And in fact, most people think wind, solar and other sources of renewable energy will prevail in the future — which they will not, without crucial contributions by science and technology.

However, at the same time, most people say that science and technology won't be able to provide a solution to the problems of energy and environment without big *changes in their lifestyle*. At least they doubt it: 50 p.c. vs. 48 p.c. -- and this is corroborated by surveys in other countries. But, on the other hand, they do not envision making strong sacrifices for. Few people do make less use of the car for environment reasons (the exceptions in Switzerland and some other countries); and even though many contemplate the possibility of lowering the thermostat up to two degrees in the winter, there is no much evidence they actually do it.

5. We could take the description above as indicating where we are in an ongoing process of learning (political, social and economic learning) which should keep apace with the process of adjustments to a much more demanding energy and environment scenario in the next decades.

People are aware of the basic facts of the equation: they are sensitive to climate change, and to the need for a less carbon-dependent economy, they reckon with the fact of life of having to live with a very carbon-dependent economy for several decades, and with the political (and economic) risks associated with a strong dependency on oil, and they know of the promises of science and technology and the possible convenience or need to revise somehow (not specifics here) their life-styles, and so on.

The point is how to develop this diffuse awareness into something better, the basis for people to be part in a deliberative and decision process at many levels -- including, first and foremost, the personal level of their own behavior.

Let me end here in a hopeful mood, with a few positive remarks.

First, we are witness to a sort of shock therapy. The very accumulation of bad news, or disquieting news, can have a crucial educational value.

Second, another positive factor is that the issue does not lend itself easily to partisan, ideological polarization. At least, the public does not seem strongly polarized around these lines. This may remove, or reduce, one obstacle to a cool, honest debate — provided only that the mass media, which are key to framing the debate, are not careless and polarized (and do not ask for permission to inform, as they may do, at times, to politicians, to commercial interests, or to associations, environmental or otherwise).

Third, on the contrary, the issue has the potential to become a community enhancing debate: there is a common bad to avoid, and a common good to attain. The losers and the winners are entire societies; risks are shared by all (even if there is an unequal distribution of the risks, benefits and costs).

Forth, another positive factor is that while the situation is dramatic in many respect, and, as I said at the beginning, the signs are on the wall for all to read them, like in Belshazzar's feast (prices, geopolitics, climate change), *this* Babylon, by contrast, is not likely to fall the next morning. It's going to take its time.

Fifth, and finally, let me touch on a matter of 'values and virtues'. The situation can be understood as a test of character and wisdom for current day societies, and there is no compelling reason why they should necessarily fail it.

Character may be strengthened. The usual 'traditional moralities' may play a crucial role here: a religious revival, family, a business ethics, a professional ethics, a bureaucratic ethics, the discovery of a 'post-post modernity' period (as the last trend of the 'new-new'). Of course, there may be various moral languages for coming back to basics: self-reliance, a sense of the common good, a moral sense that puts a premium on moral clarity, on the

search for truth and on integrity (not on cognitive and moral dissonance) -- all this, without panicking and rushing to the state as a savior.

Wisdom can be achieved, to a point -- at least love for wisdom. Science, respect for the facts, a premium on formal logic, clear thinking, clear communication should be part of this search for wisdom.

Also, virtues can be cultivated which are moral and intellectual at the same time. For instance: the virtue of learning how to live with uncertainty -- not only risk (with an assessment of probability), just plain uncertainty. This could counteract the current culturally induced obsession with 'transgression of limits' and with 'fate control' -- and it could help us along to live this way, without despair and with equanimity.

A caveat should be introduced here, to temperate even this (guarded) optimism. Learning will not come easily -- and the leading role may or may not come from the usual characters: the media, the school, the political establishment. Thus, for instance, one of the most remarkable findings in our own surveys in Spain, is the relatively minor influence schooling has on having better information and understanding of these issues. Of course, there are changes and most educated people fare better than the less educated one. But the point is, how little better they fare. They all seem to share a similar lack of focus on the matter. They are all unfocused — or have been so far.

So, it will remain to be seen in each case, to what extent those institutions and organizations can provide that learning, or hinder it. This is a local, or country, affair, and most variations are to be expected — depending on the quality of the media, the school, the political milieu.

The point is, anyway, there is a need to look at other institutions that may complement or supplement those deficiencies: business community, associations, churches, professionals, et cetera. And to trust (or give a significant degree of confidence to) the common sense and the sense of decency of ordinary people, while providing them with a variety of incentives and opportunities to learn.

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