

Leader

## The Kyoto protocol—a victim of supply security? or: if Maslow were in energy politics

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### Abstract

History suggests that energy policy priorities can be stratified, similar to the way Maslow structured his famous pyramid of human needs. The essay below claims that access to energy, supply security, energy costs, environmental issues and social acceptance are not subject to trade-off, but to a hierarchy that underlies the importance of satisfying lower-order needs before addressing the higher-order needs. The essay demonstrates the hierarchy with an “energy policy needs pyramid” based on historical evidence. The pyramid is used to analyze the viability of current items of the energy policy agenda. Conclusions indicate that the Kyoto protocol might be a victim of supply insecurity, that OPEC is good for the environment and that environmentalists should make the fight against energy poverty their first priority in order to achieve their overall goals.

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### Introduction

“A person who is lacking food, safety, love, and esteem would most probably hunger for food more strongly than for anything else”, stated the American psychologist Abraham Maslow in 1954 and formulated a theory to explain the motivational structure of a healthy person. He distinguished different groups of needs and defined the hierarchy now known as Maslow’s pyramid. Could there be a model similar to Maslow’s pyramid stratifying different groups of needs and explaining the motivations that determine a country’s decisions regarding energy policy dilemmas? Countries have been struggling for decades with setting priorities and continue to do so when confronted with dilemmas in the supply of energy to their people and economy. Is supply security the top priority? What determines the trade-off between evils: nuclear waste versus greenhouse gas emissions versus high costs of renewables? The mixture of spices is very much a creative approach—no recognized concept exists that helps getting priorities right. Surely, a country that lacks access to commercial energy, a secure energy supply, social and international recognition for complying with

environmental standards, would probably prioritize access to commercial energy before everything else.

#### *The “energy policy needs pyramid”*

Historical observation of national energy policies shows that once access to commercial energy<sup>1</sup> is obtained, the first priority is supply security, followed by cost efficiency. Since the end of the 1970s, industrialized countries have begun to consider natural resources efficiency (keyword: internalization of external costs), followed (in industrialized countries since the late 1980s) by social acceptability (cf. Fig. 1). The last three aspects explicitly reflect the pillars of sustainable development, which aimed at balancing rather than stratifying the efforts made on each of the relevant

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<sup>1</sup>Here we use a definition whereby commercial energy includes, besides electricity, energy products such as candles or lamp-kerosene. Consequently, where other energy products are available to substitute electricity there is no access-void and substitution becomes an efficiency issue. Only for purposes where electricity cannot be substituted (e.g. in a hospital) it becomes an access issue (that may be solved by diesel generators if diesel is commercially available). Based on this definition it follows that supply security cannot be understood as a measure that is independent of a given energy system: if the given system heavily relies on grid-distributed electricity (from diverse sources), supply security does as well. If the system relies on lamp-kerosene and decentral diesel generators, it is the availability of these energy products that determine the level of supply security.

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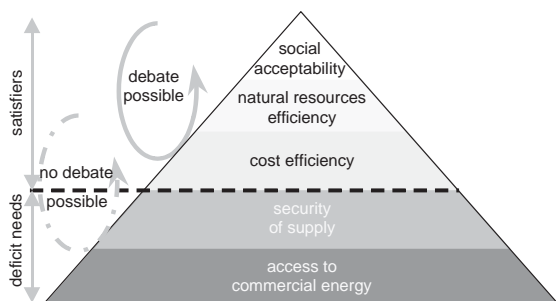


Fig. 1. Energy policy needs pyramid.

aspects. To what extent does political viability leave room for trade-offs or for balancing needs?

In Maslow's pyramid, the hierarchy illustrates that only once the lower-order needs of physical and emotional well-being are satisfied, do we concern ourselves with the higher-order needs of influence and personal development. Conversely, if the aspects that satisfy our lower-order needs disappear, we are no longer concerned about the maintenance of our higher-order needs. Can we observe similar patterns in historically observed energy policy priorities?

It seems obvious that the question of supply security only matters to people who already have access to commercial energy. Regarding the next higher level, it can be observed that the question of supply security prevails over cost-efficiency, environmental and social issues. The US provides respective evidence, given that over the past years concerns about decreasing supply security have won out (not only) over environmental issues such as climate change and Alaskan wilderness preservation. Further, the increasing questioning of electricity market liberalization—with its promise of cost efficiency in energy supply—following the 2003 summer of blackouts, again indicates that supply security takes precedence over the low-cost energy issue. A similar conclusion can be derived from the observation that China has set up for its automotive industry stringent and cost-intensive constraints regarding the per mileage consumption (as of 2005). The driver behind this is energy security (more than environmental) concerns in the context of a rapidly growing mobility market and a just as rapidly growing foreign energy (oil) dependency. Again, supply security ranks over (here: mobility) costs. A number of economists promote internalization of external costs, i.e. the application of the polluter-pays principle, adopting the viewpoint that this would be economically efficient, while other economists promote market liberalization for precisely the same reason. Reality shows that only the latter is on most national policy agendas what suggests that low-cost issues prevail over economically justifiable environmental concerns. Likewise, President Putin illustrates this point when he states that the domestic fight against

poverty is more urgent than the ratification of the Kyoto protocol (while at the same time liberalizing the electricity industry). Finally, the nuclear waste problem or the esthetics of wind farms is debated only in industrialized countries where the lower-order needs are satisfied. Social acceptance and environmental issues are often closely related what indicates that the hierarchy among the top two issues is not very strong.

Besides confirming the historically grown “energy policy needs hierarchy”, the previous examples suggest that balancing priorities may be politically feasible only to a limited extent, and only among the higher-order needs.

One could argue that Italy is an exception to the above-outlined rule—a country where the factual abandon of nuclear energy in 1987 without an appropriate replacement has led to a situation where the security of today's electricity supply is questioned as the 2003 blackout has confirmed. Still, the decision of stopping nuclear energy may have been taken by the deciders (the people) without the full awareness and understanding of the problem of supply security and its consequences. It will be interesting to observe what Italians will do in reaction to the recent blackout.

This simple model can describe the motivational structure determining a nation's policy that is concerned with supplying energy to its economy and people. The pyramid is based on observations and is therefore of a purely descriptive nature and it would be wrong to interpret it as a normative hierarchy. In other words, the statement that e.g. supply security issues would prevail over ecological concerns is purely based on observation—by no means does the hierarchy morally justify this hierarchy. Further, by drawing a simple picture, we did not consider the nexus with other policy domains—constraints from budget policy, fiscal policy, health policy, etc., which can have an important impact on energy policy, both on a national and international level. As an example, decisions related to “security of demand” in oil and gas exporting countries are driven by budget policy and are not necessarily part of the nation's policy that is concerned with supplying energy to its economy and people—but they clearly affect energy geopolitics and thereby the supply security of other countries.

That said, the pyramid reflects a certain reality. By learning from it we might avoid chasing illusions—desirable as they might be. Like a pianist, dreaming of Rachmaninov's third piano concerto—choosing to play one of his preludes instead, being realistic about the limits of his technique and finger ability, does not keep him from dreaming and slowly getting closer to his dream but prevents him from being frustrated from having spent his talent and time on a failed attempt that aimed a level too high.

So, let us now extrapolate and behave as if the pyramid was to determine future energy policy priorities.

### *Using the pyramid as a crystal ball*

First of all, the pyramid tells us that a good public understanding of the supply security issue is crucial. We should bear in mind that security perception is based not only on facts but is, to a certain extent, a social phenomenon making the public understanding important. As long as no clear understanding and agreement on appropriate level of supply security exists, lobbies who may be questioned by higher-order needs will use the “fear-tactic”. In other words, they will insist that the existing level of supply security is inadequate thereby sharpening the focus on pure supply/demand issues, away from higher-order needs. Thus good public understanding of an appropriate level of supply security should be (at least for industrialized countries) the foundation on which energy policy is built.

*The Kyoto protocol—a victim of supply security?* As long as supply security is a dominant issue on the international energy policy scene, the attempt to reach international agreements regarding higher-order needs is seriously questioned. It may therefore be wrong to wait for the Kyoto protocol to be ratified without starting parallel actions. Building “coalitions of the willing” to fight climate change—coalitions among those who can afford it, be it among industry leaders, among countries that are comfortable with their level of supply security, across consumers who can afford it, etc.—may be more effective in the short term.

“*Poor people desperately want energy, electricity particularly*”, according to Barbara Stocking, Executive Director, Oxfam GB. Today, around 1.6 billion people, or one-quarter of the world’s population do not have access to electricity. This energy divide has many faces. The standard of living improves with access to commercial energy; electricity makes it possible to cool medical drugs or to pump water. According to the World Energy Investment Outlook published in 2003 by the International Energy Agency the cost of providing electricity access by 2030 to the then estimated 1.4 billion people without access is estimated at US\$ 665 billion (compared to US\$ 9841 billion needed overall electricity investments on a worldwide level over the same time period). According to the same source, total CO<sub>2</sub> emissions would increase by as little as 1.4–1.6%. Would you ask your co-citizen who has not enough to secure a meal and a bed to spend his time and money for fire brigade contributions? No doubt, there may be a fire and there is a common interest in having a fire brigade. Is your conclusion that society should pay for such a service while the worse-off should be exempted from any payment? What about the case where the potential fire is

called climate change and co-citizens are co-nations, some of which with a majority of the people still without access to commercial energy? We may consider that only countries that have secured a certain level of electricity at a reasonable cost would be willing to commit (intrinsically motivated) to an environmental agenda. For the opposite case, if coal is locally available and cheap, that is what will be used—full stop. Indira Gandhi captured this situation eloquently, referring to poverty as the ultimate pollutant (Stockholm, 1972). The pyramid would suggest that fighting energy poverty should rank top on the world’s energy agenda before international agreements on higher-order energy needs can be achieved. Should this make the fight against energy poverty an environmentalist’s first priority?

*Is OPEC good for the environment?* We all know the rationale that OPEC helps preserving scarce resources by maintaining high prices—here we follow another track to find a similar conclusion. We could observe that OPEC has, during the Venezuela crisis in early 2003 and the war in Iraq in 2003, contributed to maintain supply and demand balanced at a surprisingly stable price—OPEC has thereby acted as an important contributor to energy–geopolitical supply security. Would it have been a cartel-free market, we might have seen much higher price spikes. This again made and makes it possible for individual countries to continue to address higher-order needs. Doesn’t this make OPEC a facilitator of potential environmental policy measures in the countries that benefit from the improved supply security (at least as long as long-term investments are ensured even though the lack of clear price signals may keep markets from an appropriate anticipation)? If we carry the same rationale a bit further, would a shift to a cartel-free, gas prevailed energy picture question today’s level of environmental policy?

*What if we go from cheap to expensive energy?* This is every environmentalist’s hope, as such a scenario is likely to increase efforts towards energy efficiencies and savings. It is, therefore, also likely to go along with capital-intensive high-tech solutions. Social acceptance would probably lose weight in the policy agenda, helping controversial technologies such as nuclear power to find their way back in the energy mix. Further, the high capital cost of advanced technologies would be likely to increase the divide between the energy-poor and the energy-rich countries, making the bridging of the energy divide an even more important issue.

*Does the pyramid advocate for the hydrogen economy?* The vision of hydrogen as a storable and mobile secondary energy carrier complementing electricity as the stationary counterpart is considered to lay far in the future—is it 30 years, 50 years? If hydrogen (or another secondary energy carrier) can be produced, stored and transported in large quantities from worldwide well-distributed resources (be it coal, nuclear, or renewable

energy) the energy–geopolitical risk could be significantly reduced compared to today. Today’s known oil and natural gas reserves are geographically very much concentrated to a few (to a large extent considered “unstable”) regions. Even if expensive, the potential of increasing supply security could, as we are told by our pyramid, be an accelerating advocate for this vision.

Like many theories, Maslow’s hasn’t endured the test of time—it failed to explain the existence of poets. Poets would probably not exist if their first preoccupation was lower order needs such as the health of their bank balances. Yet, poets are a minority. They are just as much of a minority as countries that give equal priority to environmental concerns and supply security issues.

We may challenge our priorities (and the pyramids) with new visions; and then, perhaps, there will be more poets. We may however decide to focus on visionary projects aligned with how today’s world functions; and then, hopefully, there will be less energy poverty.

One may expect that similar reflections can storm the brain in the context of other economic factors including labor, capital, information or resources such as water.

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