

From: EFN [EFN@ecolo.org]  
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Answers of EFN  
the Association of  
Environmentalists For Nuclear Energy

to the questions of the GREEN PAPER  
of the European Commission (DG TREN)

Toward a European Strategy of Energy Supply

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Reference : European Commission's web site presenting the GREEN PAPER :  
[http://europa.eu.int/comm/energy\\_transport/en/lpi\\_inv\\_en.html](http://europa.eu.int/comm/energy_transport/en/lpi_inv_en.html)

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Your own answers to the questions of the GREEN PAPER should be sent to :  
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## Introduction

For better or for worse, the future of our modern industrial society will depend on our choices of energy.

Energy has up to now been the key to social progress and improved quality of life, and it will probably be even more important in the future. However, technical progress need not necessarily entail the continued destruction of the environment nor the alteration of the chemical composition of the atmosphere.

If energy policies remain as they are now, fossil energy resources (mainly oil) will in a few decades approach exhaustion with the concomittant increase in price. We are beginning to see that effect already. War may actually break out as the different countries will then struggle to satisfy their needs for this rare commodity.

At the same time, burning more and more fossil fuel is damaging the environment and the globe is heating up at an ever-accelerating rate, while no one can predict the exact consequences.

The impending debate on energy policy is not marginal. It is rather at the heart of the development of our society, and our future depends upon it.

In this context, the questions asked in the Green Paper and the debate which it arouses are basic, all the more so since the European Union is an example

and locomotive for the rest of the world.

The Association of Environmentalists For Nuclear Energy comprises some 5000 members and supporters, with activities and presence in all countries of the EU. Its objective is to provide complete and straightforward information on questions of energy to all the citizens of Europe.

It is thus with pleasure that we answer the questions posed in the Green Paper and we invite all members and correspondents of the Association to respond individually as European citizens. The more numerous our responses, the better will be the democratic quality of the debate and the better will the decisions be representative of the aspirations of the people of the EU. Do not hesitate to participate and to communicate your point of view to Mr Johannes Maters : [johannes.maters@cec.eu.int](mailto:johannes.maters@cec.eu.int)

Contributions will be summarized in a report which may eventually serve as a base for decisions affecting the future of Europe and indeed of the whole planet.

We must prepare for that future and make the right decisions to conserve energy and to conserve our energy reserves, for we have no right to exhaust them in one generation - what would our children and grandchildren think of us?

We must protect the environment and maintain our social progress and quality of life by producing the energy we need in clean and economical ways.

Bruno Comby  
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Answers of EFN to the questions posed in the Green Paper.

Question 1. The dependence of the EU upon imported energy resources.

The EU now depends upon imported energy for well over 50% of its needs, and its dependence must be brought down at least to that figure.

Over-dependence is a source of international tension and might even lead to armed conflict. Countries which now import a major fraction of their energy, such as Italy for example, may well find themselves in a delicate position when the economic or political situation of their suppliers deteriorates, or when the prices will rise, as we already observe with the increased price of natural gas.

The main cause of the EU's energy dependence on imports is that it relies too much on oil from the Middle East (from the Gulf states) and on natural gas from unstable regions (Algeria and the republics of the ex-USSR). The gas resources of the North Sea will run out in a few years and will have to be replaced. Wherever possible fossil fuels must be replaced by nuclear,

renewable and other energies. This entails a double benefit - reduced dependence on imports and a greater respect for the environment. In the case of nuclear energy, one might even say the benefits are threefold, because nuclear energy is cheaper and reliable, while renewable energies are more expensive and unfortunately irregular, but nevertheless, they must be encouraged.

The approach should be both geopolitical (to reduce dependence on importation and to oppose monopolistic tendencies) and economic (to supply energy at low price). More nuclear energy would greatly reduce the dependence of the EU upon imported energy, and at the same time it would reduce the overall cost of energy. The contribution of renewable energies is also welcome, of course, although the energy they produce is more expensive than nuclear.

Question 2. The coordination and consistency of energy policy across the EU.

This is an old problem which will slowly, very slowly, converge towards a solution.

Experience shows that every country has its own policy depending upon its own resources and politics. For example, the UK, France and Italy have quite different policies.

The differences provide a rich variety of experience from which the whole EU may profit: Norway supplies North Sea gas to different countries; France leads the way in nuclear energy producing clean electricity without emitting CO<sub>2</sub> and thus respecting the environment; Denmark and Germany have led the way for the development of new types of wind turbines.

Free markets, the Kyoto agreements, the increased cost of oil and natural gas, the high cost of solar and wind energy offer the Community broad areas for reflection which the European Commission should encourage.

Question 3. Taxation - an encouragement or an obstacle

In a market economy encouragement is more productive than the constraints and the heavy hand of a tax policy intended to guide the redistribution of resources.

But above all one must not confuse energy policy with ideology and politics.

Energy policy must be based on tangible FACTS and proven technical solutions and not on ideological desires, no matter how legitimate they may seem to be.

We hear too much from incompetents who want a hand in formulating energy policy, which would have long range implications of one kind or another. For example, wind turbines are well adapted to isolated regions or for producing

small amounts of energy in specific cases, but we can't count on them to supply our industrial needs, to heat our houses or to power our trains.

Question 4. Supply contracts

We must above all try to reduce our dependence on external resources as much as possible. We must therefore encourage (nuclear and renewable) resources within the EC for they are relatively insensitive to price variations as compared to imported coal, oil and gas. Furthermore, this would free us of the need to stock-pile against the threat of a surge of high prices or, indeed, of being entirely cut off from our sources of supply.

Today, for reasons of price and convenience, uranium is mostly imported from abroad, from Gabon, Australia, Canada, Namibia, etc. If sea lanes were cut, we could easily bring in what we need by air transport, because the quantities are small. The cost of fuel is an almost negligible component of the cost of nuclear electricity, and we could with some effort extract it from relatively poor minerals found within Europe without much increasing the cost of a nuclear kWh. Moreover, in view of the small quantities involved (about 20 000 tonnes of natural uranium per year), it would be easy to create a strategic reserve of several years supply. The ample stocks of plutonium, enriched and depleted uranium held in certain countries of the EU already form a sort of strategic reserve, for they could be readily turned into fuel elements for certain reactors.

Question 5. Should we stock-pile coal and natural gas as we already stock-pile oil?

In view of the vast volumes consumed, it is hardly possible to stock for the long term. Nonetheless, it would be wise to create stocks to cover 2 or 3 months needs: they could play a buffering role, either political or economic.

Priority should be given to reducing such dependence by favoring nuclear, energy conservation, and renewables (hydro, solar, and wind energies).

Question 6. Optimization of the energy transport network.

In a world where everything is becoming global, there should be free exchange of energy between the states of the EU. Thus a country with excess production could satisfy the needs of a neighboring country in short supply. The transport of energy should be free of administrative constraints and it should be technically and economically optimized. Although a free market is desirable, it should be coordinated and disciplined. Some international connections should be strengthened, notably those between France and Spain and between France and Italy.

Question 7. Developing and financing renewable energies

The scientific and technical development of renewables requires a great deal of work and thought, but relatively little compared to such heavy industries as nuclear energy and aviation. One may justify a modest contribution for a limited length of time, and offer encouragement to the consumers as is the practice for electric and hybrid automobiles.

But this kind of contribution should be economically acceptable; it should not become a permanent contribution to the support of sources of energy which are by their very nature, at least in the next 50 years, destined to be marginal.

It is normal to contribute to the research and development of the energies which we will need tomorrow, and in particular increasing the share of renewables. But one must avoid the error of treating renewables at the same level as nuclear (fission and fusion) which must inevitably become the major sources of energy for our industrial society.

Common sense leads us to suggest that the development of different energies be financed in proportion to the potential each may have to satisfy our eventual needs. It is logical therefore to provide a moderate amount of help to solar and wind energy, to strongly support conservation, to make major investments in future fission reactors and to support fusion research for the long term.

Question 8. Nuclear energy and nuclear waste.

Nuclear energy produces very small volume of waste, which can be perfectly well handled, confined and reprocessed. On the other hand, the combustion products of fossil fuels, mainly CO<sub>2</sub>, are a million times more voluminous and they are simply ejected into the atmosphere, which thus becomes their trash can.

Furthermore, radioactive waste disintegrates spontaneously with a longer or shorter half-life. One needs only to confine these wastes until they decay to safe level.

Let us remark here that the radioactivity and thus the toxicity decrease very rapidly. If one reprocesses nuclear waste to separate out and recycle the uranium and plutonium, then the remaining radio-isotopes, mainly strontium-90 and cesium-137 with 30 year half-lives, are strongly radioactive for less than a thousand years. (Down a thousand times in 300 years, a million times in 600 years, etc.).

Despite its short- and long-term radioactive wastes, the production of nuclear energy is among the least polluting industries we have, as compared to coal- and oil-fired energy generation and chemical processing industries.

It would be appropriate to demand of the non-nuclear industries that they recover, reprocess and confine their wastes, and hold them to standards similar to those of the nuclear industry.

We should make every effort to monitor our wastes and to reduce them as much as possible. But the nuclear industry is well ahead of all the others. They should take the nuclear industry as an example.

The Commission's excellent study comparing the external costs of various kinds of energy (ExternE study, 1998, DG Research) clearly demonstrates the advantage of nuclear energy. It would be appropriate to distribute this serious and significant report more widely, to refer to it more frequently, and to emphasize the fact that by using nuclear energy we avoid injecting vast quantities of CO<sub>2</sub> into the atmosphere.

The Commission should point out the evident fact that installing nuclear energy in a country serves to diminish its production of greenhouse gases, and that safe nuclear energy can and must be taken into account in international discussions on the environment, for example in the exchange mechanisms of the Kyoto Protocol.

#### Question 9. The Kyoto Protocol

The Protocol with its exchange mechanisms should be applied. One would then appreciate, as the USA has already observed, that the Kyoto conditions cannot be satisfied unless we resort to nuclear energy on a large scale. The nucleus is the only source of energy readily available on an industrial scale at an economically acceptable price which makes no contribution to the greenhouse effect. With adequate safety conditions, it is equally applicable to developing countries such as China, India and Indonesia which will produce massive quantities of GHG. The EC should not only favor clean energy within its own member states but also encourage the development of clean energies - nuclear and renewables - and energy-saving technology in the developing countries so that they may take advantage of our experience.

#### Question 10. Biofuels/Hydrogen

The answers regarding biofuels and hydrogen should be treated separately.

Biofuels are expensive to produce and polluting - burning them produces nitrogen oxides and sulfur dioxide. They absorb atmospheric CO<sub>2</sub> in growing but return it to the atmosphere when they are burned. They require big plantations and are hardly adaptable to the heavily industrialized countries of the EU. Biofuels might be useful in specific cases and especially in developing countries with excess agricultural resources and with little other sources of energy. Brazil or Madagascar might perhaps resort to biofuels when imported oil and coal become too dear.

On the other hand, we should move as quickly as possible toward a hydrogen economy. Hydrogen is light, highly performing and clean to burn for it produces only water vapor at the exhaust pipe. Hydrogen will be very interesting in the future in the advanced countries - its production consumes a lot of electric energy, which in the end will probably be nuclear. There are two ways to use hydrogen directly, in suitably modified internal combustion engines and in fuel cells; the development of the latter must be a priority for the EU. Hydrogen will also be used to treat heavy fossil fuels rich in carbon, making them lighter, more fluid and richer in hydrogen: we may turn to this process when natural gas and lighter grades of oil approach exhaustion.

#### Question 11. Energy conservation.

The cleanest energy and that which best prolongs the life of our energy reserves is that which we do not consume.

We must encourage energy conservation but not to the extent of returning to the age of the cave-man. Standards should be established and recommendations should be made for meeting them, in building insulation, in industrial processes, in modern transportation, etc. These standards should be progressively made uniform across the EU.

All European citizens should receive official encouragement to conserve energy, as has already been done in certain countries: reduced VAT on

fluorescent light bulbs, tax rebates for installing insulation in buildings and for installing heat pumps, progressive taxation of high powered automobiles, etc.

#### Question 12. Economical transportation - railroads

Many examples show that rail transportation of containers, trailers and trucks is feasible: Switzerland, Austria, Saxony, the Eurotunnel, the United States...

This trend should be pursued in priority for such major routes as Seville to Brussels to Copenhagen, Hamburg to Rome, Munich to Warsaw, Hamburg to Vienna, etc.

Motor vehicles in cities: electric and hybrid motor cars and fuel-cell vehicles should be encouraged, especially for taxis, buses, delivery vehicles, trash collection trucks, etc.

#### Question 13. Long term thinking - preparing the future

The energy planning requires long lead times, perhaps 20 years or more. One must call upon well known specialists in planning, and set aside irrational ideologies. Energy supply is too important an issue to be the subject of declarations of intention which cannot be achieved, and of pleasing but unrealistic and unrealizable dreams. We must evaluate our present policies, our fossil energy resources, and the potential of renewables and nuclear energy without mistaken assumptions about cost or the ability to meet the energy requirements of an industrial society and the environmental impact of each type of energy.

Nuclear energy, able to supply a massive base load of electrical power safely and cleanly, is in its infancy and should grow substantially in the next few decades. When one takes into account the fact that the present generation of reactors, efficient as they are, consume little more than 1% of the energy available in their uranium fuel, one has a measure of the space for future development. We shall have new kinds of reactors, cleaner, safer and more efficient; and we shall reprocess used nuclear fuel to extract more energy from it, and to reduce the residual radioactivity of the small amount of ultimate waste it produces.

#### Question 14. Other considerations

It is important that we share our scientific knowledge and technical competence with the developing countries. In some regions of the world, peace will depend on the availability of energy and of water; and in a global economy this also has consequences upon the wellbeing and economies of the advanced countries. We all live on the same planet, and one cannot be happy in the presence of unhappy neighbors. This poses the question of the ethical foundations of our civilization and of the necessary solidarity between the advanced and the developing countries.

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