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Renewable energies and the environment

Report[1]
Committee on the Environment, Agriculture and Local and Regional Affairs
Rapporteur: Mr Jean-François LE GRAND, France, Group of the European People's Party

Summary

The current energy system is less and less able to meet present energy needs and to solve the problems associated with greenhouse gas emissions. The system is based on finite fossil resources and globalised economic structures (monopolies). These two factors have created energy dependencies which are already today causing significant negative impacts for many national economies. In addition, many people are suffering from health problems as a result of environmental pollution.

It is therefore necessary to act quickly to achieve a radical change towards the use of renewable energies, to reduce energy consumption and to enhance technological efficiency. Renewable energies are the only alternative to the established energy industry, acceptable in environmental, social and economic terms. This report contains comprehensive recommendations as to how such a changeover can be achieved as rapidly as possible.

1. Reference to committee: Doc. 11154, Reference 3312 of 16 March 2007 and Doc. 11197, Reference 3332 of 16 April 2007.

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A. Draft recommendation

1. The current energy system, characterised by excessive consumption of fossil fuels, is increasingly unable to solve the problems of energy supply. The structures of conventional energy supply are increasingly at odds with society's needs for accessible and clean energy.

2. The Parliamentary Assembly would therefore like to see measures for sustainable restructuring of the energy system taken as rapidly as possible and energy generation brought back into line with the requirements of lasting energy security and environmental protection.

3. This restructuring of the energy system should be aimed at making renewable energies rapidly and comprehensively available. The use of solar-, wind- and hydro-power and geothermal energy has no limits in real terms and does not create any consumption costs. In addition, if these energies are used in a sustainable fashion, they do not trigger any damaging environmental effects. The same applies to biomass, provided it is cultivated in a sustainable way and produced without competition with food needs. Renewable energies also mean long-term energy security, since they allow for domestic sources to be used. In addition, transnational networks and supply structures are only needed to a small degree.

4. One of the decisive economic and social factors, which makes the use of renewable energies vital, is the fact that they can be used on a decentralised basis. A large number of small and medium-sized installations will, together, provide the energy needed for a whole society. The decentralised structure of the system, involving many different players, will allow a lively market to develop. A system based on renewable energies therefore offers an opportunity to break down the current monopoly structures on the energy markets.

5. The increasing energy-related crises – the climate crisis, the energy dependency crisis, the poverty crisis, nuclear threats, the water crisis and the health crisis – demonstrate clearly that rapid action is needed if change is to be shaped politically and socially. Any further delay would only mean that the crises over energy and the conflicts over distribution of the remaining resources, with their associated social costs, would continue to escalate until they become impossible to manage.

6. The Assembly believes that measures such as tax exemptions, tax reductions or favourable feed-in tariffs should be taken in order to make renewable energy installations as profitable as possible, without negative impacts on the environment. Measures should also be taken to ensure that the construction of renewable energy plants is not subject to – often excessively lengthy – bureaucratic procedures. The construction of such plants should be regarded as a priority.

7. Indeed, such plants make it possible to avoid the social costs of the energy crisis and compensate for the subsidies and privileges that have been granted to conventional energies for decades, which led to their dominant market position. The only alternative to this privileged position for renewables would be full internalisation of the external costs of conventional energies in energy prices. The principles of environmental accounting should be applied to take into account the full cost of environmental damage caused by conventional non-renewable energy systems. In this respect, the Assembly recalls its Recommendation 1653 (2004) on environmental accounting as a sustainable development tool.

8. The Assembly also believes that, to ensure the success of all these measures, consideration must be given to the setting up of an agency with a task to promote worldwide the use of renewable energies. This agency could, *inter alia*, provide advice on the implementation of national renewable energy policies and assistance with technology transfer in the field of renewable energies, thus enhancing skills and knowledge on renewable energies. It could also collect all existing, sound scientific information.

9. The Assembly therefore asks the Committee of Ministers to call on Council of Europe member states to:

9.1. take the necessary measures for profitable large-scale use of renewable energies (tax exemptions, tax reductions or favourable feed-in tariffs);

9.2. organise the energy markets of the Council of Europe member states in a non-discriminatory fashion and take the necessary measures to guarantee all energy suppliers equal access to distribution networks;

9.3. ensure that networks, regardless of their owners, are absolutely neutral in the conditions applicable to energy suppliers;

9.4. grant tax relief or tax exemptions on agrofuels in order to ensure their competitiveness with fossil fuels in the transition period until broad market penetration has been achieved, thus giving a fresh impetus to the agricultural sector;

9.5. give clear priorities in territorial planning law, to allow the setting aside of locations for the generation of renewable energies, whatever the kind of energy which will be used;

9.6. seek to ensure that public and private buildings, especially those under construction, are adapted to the use of renewable energies and set up programmes for existing private buildings to support the use of renewable energies;

9.7. use fossil energies as effectively as possible during the transition period;

9.8. modernise conventional power plants in order to allow cogeneration, which would offer the prospect of a 100% gain in energy efficiency;

9.9. set up an International Renewable Energy Agency (IRENA) with a task to promote worldwide the use of renewable energies;

9.10. run large-scale information and advertising campaigns on renewable energies in order to overcome people’s reservations and encourage private investors to invest in renewable energies.

B. Explanatory memorandum by Mr Jean-François Le Grand, rapporteur

1. Time to act

1. The current energy system has two predetermined breaking points, the finiteness of conventional fossil and nuclear fuel resources, and a growing number of crises in the world that are related to energy. At some point in the foreseeable future, these breaking points will cause a situation to arise in which the energy system in its current form would no longer be able to function. To ensure that this will not happen it will be necessary to effect an immediate changeover to renewable energies. This is a challenge of historical importance that the member states and their governments need to address.

2. The problems that will have to be dealt with in connection with carrying out this changeover are small in comparison to the conflicts that are inherent in the current energy system and are bound to grow more pronounced as time goes on. The nations and governments of the world still have a choice, but continued waiting and delaying will eventually result in this choice being taken out of their hands by worsening energy crises. Waiting until then to initiate an energy policy changeover would make it necessary for a much greater effort and could have enormous political and social repercussions.

2. The finiteness of conventional energy resources

3. Mankind is living on a dwindling supply of resources. Conventional energy reserves that accumulated over many millions of years are being used up at an increasingly rapid pace. A child who is born today is likely to witness a situation within his or her lifetime in which our civilisation will have to do without oil, gas or uranium, since these resources will have been exhausted by then. The end of conventional fuel resources will necessarily mean the end of today's methods of generating power. When this point will be reached is, essentially, undisputed. Based on known fuel reserves that it would be technically and economically feasible to exploit it can be estimated approximately how long these reserves will last, assuming energy demand remains at its current level. In the case of oil we are looking at about forty years, in the case of natural gas sixty-five years, in the case of coal one hundred and seventy years, and in the case of uranium perhaps another fifty years. The growing worldwide demand for energy means that depletion of resources will occur even earlier.

3. The world's worst energy-related crises

3.1. Climate crisis

4. The latest assessment report by the Intergovernmental Panel on Climate Change merely confirmed what has long been known. The average temperature on the earth's surface has risen by 0.74°C since the end of the 19th century. According to scientific models it will continue to rise by another 1.8 to 4°C by the year 2100. The consequence of this will be climate change on a scale larger than anything seen over the past 10 000 years. Extreme weather events, such as severe storms, floods and droughts will occur more frequently than is already the case today. One of the most serious consequences will doubtless be the resultant rise in sea level. During the 20th century scientists measured a rise in average sea level of between 10 and 20 centimetres. It is predicted that by the year 2100 there will be a further rise in sea level of between 18 and 59 centimetres. This will make large areas of land uninhabitable and threaten water supplies for billions of people.

5. The cause of all these negative changes is clear. They have been brought about first and foremost by the burning of conventional fuels to obtain energy. In this context it becomes clear that the economic costs of climate change are higher than the costs of a changeover to renewable energies.

3.2. Dependency crisis

6. In the case of fossil fuels more and more countries are becoming dependent on ever fewer sources in fewer countries. The majority of European countries are dependent on imports to cover more than half of their energy needs. It is obvious that there is a potential here for crisis in the future. Growing dependency on energy imports means critical political dependency. In such a situation, foreign, security and human rights policy will become a political football for energy policy interests, and international tensions, or even wars, could break out over access to the remaining resources.

3.3. Poverty crisis

7. Developing countries without fossil fuel resources of their own, that is, the majority of them, have to pay the same prices for fuel imports as everyone else on the world market, even though they have an average per capita gross domestic product level that is considerably less than 10% of the average GDP figure for the Western industrial nations. Based on their national incomes the developing countries have a financial burden that is, de facto, ten times greater and more when it comes to paying for their fuel imports. At the same time, due to a lack of networked energy supply infrastructures, they are more strongly dependent on oil supplies that are not provided via pipelines than is the case with industrialised countries. The consequences of energy poverty are excessive exploitation of biomass, desertification, rural exodus into already crowded slums on the peripheries of major cities, destruction of social structures, and a breakdown of political order that could lead to international conflicts.

3.4. Nuclear crisis

8. Nuclear waste needs to be stored safely for 100 000 years. No one can provide guarantees that far into the future. The inherent uncertainty associated with final storage sites for nuclear waste is obvious, as is the fact that we are leaving behind a difficult legacy for future generations.

9. But even the day-to-day operation of nuclear power plants involves unconscionable risks. The ability to control nuclear energy and to keep it safe for civilian use has been recurrently called into question by accidents of serious and even catastrophic proportions. Today these dangers are compounded by the threat of terrorism which could some day target nuclear power plants.

3.5. Water crisis

10. The water crisis being seen in many regions of the world, to an increasing extent also in the northern hemisphere, is in large measure a result of our use of nuclear and fossil fuels to generate power. In connection with the operation of nuclear and coal-fired power plants around 3 cubic metres of water are evaporated for every megawatt hour of electricity generated. A modern nuclear power plant can generate around 8 million megawatt hours of electricity per year. This puts the amount of water consumed at around 24 million cubic metres. It is easy to understand that this level of water consumption in connection with the generation of electricity could have a disruptive effect on regional water cycles.

11. In regions where water is scarce the water needs of power plants enter into direct competition with the water needs of the human population. This begins with the production of fossil fuels. Water is needed, for instance, to wash coal. In oil fields water is pumped underground to create the pressure needed to push the oil up to the surface.

3.6. Health crisis

12. Scientific authors have come to the conclusion that around a fourth of the people in the world have health problems of some kind as a result of emissions produced by the burning of fossil fuels, including asthma and other bronchial disorders. The present energy system has a negative influence on human health and quality of life and as a consequence of this is also responsible for increased health care costs.

13. Indoor emissions, such as occur when people burn wood in houses and huts, are particularly dangerous to human health. The World Health Organization attributes a large proportion of the premature deaths seen in Africa to emissions of this kind.

4. Alternatives

14. It follows from the above-indicated crises that the alternative to the present energy system is to be found in emission-free energy resources.

4.1. Is nuclear energy an emission-free alternative?

15. Nuclear energy is frequently named as a climate-friendly option for the generation of electrical energy. It is often argued that the operation of nuclear power plants does not result in the production of greenhouse gas emissions. However, this argument fails to take into account the fact that the use of nuclear energy does, indeed, result in the production of greenhouse gas emissions, given that the use of fossil fuels is required in the course of mining uranium ore, refining uranium, and producing uranium fuel rods. As such, nuclear energy

is an indirect cause of greenhouse gas emissions produced in the various phases of uranium processing. The world's uranium reserves are declining and this has already made it necessary to mine lower-grade ores. Studies indicate that over the next twenty to thirty years a kilowatt hour of electricity from a nuclear power plant will have a larger carbon footprint than the same amount of electricity generated by a gas-fired power plant. It is already the case today that nuclear power results in considerably more carbon dioxide emissions per kilowatt hour of electricity than is the case for wind energy. As such, nuclear energy is not a sustainable alternative.

4.2. Is clean coal technology an alternative?

16. There has been discussion of so-called "clean coal" power stations, in which the carbon dioxide would be removed from the flue gases produced and stored permanently. However, this process would result in considerable efficiency losses for the power plants in question, ranging between 20% and 40%. In addition to this, it has not yet been determined how carbon dioxide can be stored securely and how much this would cost. This technology is still far from being developed to a level of perfection that would enable it to find widespread use. In addition, this energy option is likely to be more expensive than the use of renewable energies and to achieve less in terms of reducing CO2 than the use of fossil fuels in cogeneration systems.

4.3. Renewable energies

4.3.1. Efficiency and emissions

17. A modern wind turbine will produce up to 100 times more energy than was needed for its construction and operation over a thirty-year period. In the case of solar panels this factor is currently 10, but is rapidly increasing as a result of further technological advances. Thus, the efficiency of these systems is guaranteed. The carbon dioxide emissions associated with wind energy are well below those of all types of fossil fuels, viewed over the entire length of the production chain. Biomass energy is not completely climate-neutral in every instance, but it is nonetheless better in this regard than fossil fuels. The prerequisite for ensuring this is that as much biomass must be grown again as was used for the purpose of producing energy.

4.3.2. Rapid implementation

18. The potentials of the various renewable energy forms can be mobilised rapidly when used in decentralised form. Wind turbines, solar arrays, or water-driven power plants can be planned and constructed much more quickly than large-scale thermal power plants. This is particularly true of nuclear power plants, given the inordinate amount of time needed for their planning and construction. Expanding the use of renewable energies to produce electricity will require international technology transfers. This, in turn, will require a considerable increase in the training of specialists to operate the systems put in place.

4.3.3. Land needs

19. The use of renewable energies will require a certain amount of land use, for instance to provide locations for the construction of wind farms or fields for growing biomass. The use of some locations for the placement of wind turbines may provoke protests from the local population and they may want to assert landscape protection rights. However, this claim must be compared with the impact on landscapes caused by conventional energy producers as well as the consequences of emissions for the environment, which rank higher in the hierarchy of dangers. In the case of land needs for biomass production there is a fear of competition with land needs for food crop production. There are also predictions that this will lead to the creation of large-scale monocultures. Forms of biomass production are needed that will rule out these dangers. And this is possible.

4.3.4. Energy mix and storage of solar and wind energy

20. An energy mix is needed to be able to make use of the full potentials offered by renewable energies. Initially a mix of conventional and renewable energies is needed, in which the percentage of renewable energies would gradually rise and that of conventional energies would gradually fall. The objective, in the end, would be to have a mutually complementary mix consisting of all forms of renewable energy, including a storage system for solar and wind power, given that electricity production from these sources is subject to fluctuation.

4.3.5. Costs

21. The full costs of conventional power production must be compared with those for power produced with renewable energies. A comparison of these full costs must include any subsidies paid as well as the various system costs. With the exception of bioenergy, renewable energies do not entail fuel costs and infrastructure costs are low for the most part. In the case of conventional energies, there are rising fuel costs and follow-on costs to worry about. Renewable energies involve only engineering costs for the most part and the latter will decline as system production volumes increase. Conventional energy costs, by contrast, will continue to rise. Mobilisation of renewable energies will trigger investments and thus a long wave cycle, moving the economy forward into a new energy structure. In contrast to conventional energies, where the economic and social costs are rising inexorably, the economic and social costs for renewable energies are constantly decreasing, meaning that they present an opportunity for a sustained economic upswing.

Reporting committee: Committee on the Environment, Agriculture and Local and Regional Affairs

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NB: The names of those members present at the meeting are printed in **bold**

Secretariat to the committee: Mrs Nollinger, Mr Torcătoriu and Mrs Karanjac