I

(Resolutions, recommendations and opinions)

OPINIONS

449TH PLENARY SESSION HELD ON 3 AND 4 DECEMBER 2008

Opinion of the European Economic and Social Committee on 'Future investments in the nuclear industry and the role of such investments in EU energy policy'

(2009/C 175/01)

By letter of 27 May 2008, the European Commission asked the European Economic and Social Committee, under Article 262 of the Treaty establishing the European Community, to draw up an exploratory opinion on

Future investments in the nuclear industry and the role of such investments in EU energy policy.

The Section for Transport, Energy, Infrastructure and the Information Society, which was responsible for preparing the Committee's work on the subject, adopted its opinion on 10 November 2008. The rapporteur was Mr IOZIA.

At its 449th plenary session, held on 4 December 2008, the European Economic and Social Committee adopted the following opinion by 122 votes to 15 with 16 abstentions.

1. Considerations and recommendations

1.1 Including administrative procedures and construction times, producing electricity from a nuclear power station takes around ten years and requires investment of between EUR 2 billion and EUR 4,5 billion for an installed capacity of 1 000 or 1 600 MWe. Guarantees of a stable legislative framework that takes into account the time lapse between investment and bringing the energy to market are essential. Both the choice of nuclear and the attendant legislation should enjoy the support of a large majority of the public and politicians.

1.2 Under present programmes, about half of power stations will have to be decommissioned by 2030. The EESC considers it vital to adopt stringent measures that guarantee adequate funding for decommissioning on the polluter-pays principle and a high level of protection for workers and the public. It wholeheartedly supports the Commission's proposals that Recommendation 2006/851/Euratom be made into a directive which creates independent authorities to manage funds for decommissioning and dismantling.

The EESC:

1.3 points out that the main obstacles are policy uncertainties, licensing procedures, lack of both transparency and comprehensive, clear and truthful information on actual risks, and failure to decide on final, safe locations for waste storage sites. The risk for private investors is too great and the financial crisis makes it even more difficult to secure the kind of medium- to long-term capital the nuclear industry needs. Leaving aside state aid to the sector, funding could be facilitated by a stable and secure regulatory framework for investors and by the possibility of concluding long-term supply contracts that guarantee a return on investment. The difficulties encountered in increasing even modestly the Euratom resources for funding (Euratom loans) suggest a rapid change in the Union's policy is unlikely;

1.4 is convinced that the public should be democratically involved and given the opportunity to get a full picture of the risks and the benefits of nuclear power so that they can play an informed part in the choices that directly affect them. The EESC wishes to take up this demand, and calls upon the Commission to encourage the Member States to launch a campaign for transparency and certainty regarding European energy demand, energy efficiency and the various options, including nuclear;

1.5 as matters stand, considers prolonging the use of power stations to be an economically viable option, provided that safety rules are strictly observed, even if this means foregoing a substantial increase in thermodynamic efficiency (15-20 %);

1.6 recommends facilitating investment in a) research into safety and into protection for workers and the public, and b) support for training, apprentice and professional development programmes to ensure that a high level of technical and technological capacity is constantly maintained in the sector's industry and in the national regulatory and monitoring authorities. This investment should be partly financed by national public programmes, as well as by Euratom FP7;

1.7 thinks that the various regimes for compensation and allocating responsibility in the case of accidents are insufficient and unwarranted. It would like to see, as an initial step, harmonisation of the provisions of the Paris and Vienna Conventions, which do not lay down the same type of applicable legal framework and the same compensation measures for nuclear-related damage. A directive should be adopted, as provided for in Article 98 of the Euratom Treaty on insurance of risks, which states clearly that responsibility in the case of accidents lies entirely with the nuclear operators. Given the nature of the risk, risk-sharing between the European operators in the sector, based on existing examples, should be encouraged;

1.8 believes that, in order to cope with a potential substantial increase in the demand for new power stations, European industry must plan major investment in knowledge and training and in research and development, which is essential for the future of the sector in Europe. Levels of less than 10-15 % of electricity from nuclear sources would make little sense, since the administrative costs and waste management require critical mass in order to build up economies of scale;

1.9 is aware that the solution of selecting locations for one or more joint European storage sites (similar to the United States' approach) is not feasible, and calls on Member States to speed up the process of deciding on final national sites. Harmonised safety requirements need to be established, for which the EESC — echoing the Western European Nuclear Regulators' Association (WENRA) and the European Parliament — calls for a directive;

1.10 urges the Commission to support research and development programmes, especially on fourth generation nuclear technology.

1.11 Neither are the available research resources sufficient in the area of waste treatment and protection from ionising radiation. The EESC urges the Commission, the Council and Parliament to provide the Euratom FP7 with further resources to support specific and dedicated joint technological initiatives, as is being done for example in the fields of fuel cells and medicines. The EESC also calls on the Member States to do considerably more to address this problem in areas for which they are responsible. In July 2008 the Nuclear Decommissioning Authority revised upwards the public funding needs for decommissioning by 30 % over 2003. The NDA estimate is GBP 73 billion (EUR 92 billion) and this is set to rise [1]. EDF, where the level of standardisation is high, says that these costs are equivalent to 15-20 % of initial construction costs.

1.12 In the Committee's view there are a number of steps that the Union and Member States might consider taking to reduce uncertainties.

— On the political side they could seek to build long lasting political consensus across the political spectrum about the part that nuclear may have to take in the fight against climate change.

— On the economic side they could clarify what requirements they will impose about decommissioning and nuclear waste disposal and the financial provision that operators should make for these long-term costs. They and the regulators could also clarify the terms on which nuclear power may be supplied to the grid and the nature of long term supply contracts that will be acceptable.

— On the research side the Union and member states may be able to support further R and D into third and fourth generation nuclear technology (including fusion) that will have better efficiency, environmental and safety standards than the present generation of nuclear plants.

— On the land-use planning side they could expedite the lengthy processes for identifying and permitting appropriate sites.

— On the financial side the European financial institutions may be able to mobilise sources of loan financing that will encourage other investors to come forward and play their part.

2. **Financing the nuclear sector**

2.1 *Energy demand in Europe and the increase in foreseeable costs*

2.1.1 In the next 20 years Europe will have to plough investment of around EUR 800-1 000 billion (whatever the fuel used) into replacing existing power stations. Out of a total of 146 nuclear reactors, an estimated 50 to 70 will have to be replaced (with potential costs of between EUR 100 and 200 billion).

2.1.2 The cost of extending the working life of currently operational nuclear power stations for longer is equivalent to some 25 % of the cost of a new power station, and these power stations can be used for a further period varying between 10 and 20 years. The costs quoted in a recent study [2] are not uniform, varying between 80 and 500 EUR/kWe according to the technology used, and relate to projects to extend working life by around 10 years.

(1) House of Commons Committee of Public Accounts: 38th Report of Session 2007/2008 — Nuclear Decommissioning Authority, UK.

(2) Osterreichisches Okologie Institut, Vienna, 2007.

2.1.3 Uncertainty as to future choices in the energy sector and the possibility of extracting further profit from investment are inducing operators to call for extending the life of existing power stations rather than investing huge amounts in new and more efficient ones. Extending the working life of power stations, ensuring at least the same level of safety, is certainly beneficial both financially and in terms of climate policy, but it merely puts off rather than solves the problem of meeting long-term energy demand.

2.1.4 If it is decided to phase out nuclear power generation, this will have to be replaced with other forms of power whose emissions level and base load is the same. If decommissioned power stations are to be replaced, the costs will be between EUR 100 and 200 billion. If it is decided to maintain nuclear power's current share of production, between EUR 200 and 400 billion will be needed, depending on electricity demand.

2.1.5 The cost of a new nuclear power station is estimated at between EUR 2 and 4,5 billion. The EIB considers the long-term development of nuclear energy production to be uncertain, forecasting a sharp decline in the EU of 40 % in 2030 compared to 2004. The president of the EIB confirmed this forecast at a very recent EESC hearing. The International Atomic Energy Agency (IAEA) expects nuclear electricity generation capacity to rise during the same period from 368 GWe to 416 GWe, representing a worldwide increase of 13 %, although a reduction of 15 GWe [3] is foreseen in Europe.

2.2 *Climate change, CO_2 emissions and the nuclear sector*

2.2.1 To achieve the Kyoto goals and those, even more stringent, to be set at Copenhagen, the EU would have to generate 60 % of electricity without CO_2 emissions. Currently, around 40 % of EU CO_2 emissions come from energy generation. The part played by the nuclear sector cannot be disregarded. According to the Commission, the target of 20 % of energy coming from renewables by 2020 should ideally be raised to 30 % of energy by 2030.

2.2.2 an increase can be expected in CO_2 emissions resulting from the production and processing of uranium, mainly due to the gradual exhaustion of mineral deposits with high uranium concentration, and from the increase in greenhouse gases owing to the use of fluorine and chlorine, necessary for the preparation of uranium hexafluoride and the purification of the zirconium needed for the tubes into which enriched uranium is inserted.

2.2.3 The carbon footprint of nuclear power generation will, however, remain very small, and this should be taken into due consideration.

2.2.4 Electricity demand from the public and private transport sectors will grow, as will demand for production of hydrogen, 95 % of which currently comes from hydrocarbons. Hydrogen will help solve the electricity storage problem, provided that it is obtained from fuels with extremely low emissions.

(3) Report #:DOE/EIA-0484(2008) June 2008

2.3 *Difficulties encountered by the nuclear industry*

2.3.1 The greatest difficulty lies in the uncertain administrative and regulatory framework. Procedures vary between countries and in some cases they may entail a doubling or tripling of the construction time. In Finland the Commission estimates that at least 10 years are needed, but work has stopped owing to construction problems that have arisen and a delay of at least 18 months is anticipated. The administrative process started in 2000 and connection with the network is unlikely to happen before 2011.

2.3.2 Investment in the nuclear sector is distinguished by a particularly large injection of initial capital, around 60 % of total investment, with sale of electricity only starting after about 10 years. Around 20 years are needed to recoup the capital invested and the cost thereof. This shows the importance of lifetimes that are long enough for these technologies to be economically viable.

2.3.3 These are very long-term investments: it can take over 100 years to commission, operate, decontaminate and dismantle nuclear plant. It is essential that operators' financial stability is guaranteed for a long period of time and that Member States make a long-term commitment to the nuclear sector.

2.3.4 Funds for the nuclear sector depend more than others on the policy choices of national governments. In fact, this need for a definite and stable legal framework is the first source of uncertainty. There must be a policy to involve the public and make them more aware that they can contribute to the choice on the basis of information that is complete, transparent, understandable and truthful. Only a democratic procedure can ensure that an informed choice is made which will determine the future of the European nuclear industry.

2.3.5 The high incidence of the financial cost entails the need to 'sell' all the energy produced, given that nuclear installations must operate as a base load, distributing the electricity generated for a very high number of hours each year. A problem arises concerning certainty of profitability, which could be overcome by opting to establish long-term contracts, as in the case of Finland.

2.3.6 Another uncertainty factor is the system for providing compensation and assigning responsibility between the Member States in case of accidents. There should ideally be a standard European guarantee system in order to improve on current schemes and current insurance cover, which would be completely insufficient in the case of a serious accident. Producers must bear the entire burden and responsibility, as in any other business. In view of the nature of the risk (extremely high costs in the event of a serious accident and very low probability of this happening), forms of mutual co-insurance by the various nuclear energy producers should be encouraged.

2.3.7 Public opinion. The most recent survey of public opinion [4] shows a reversal of the trend where the nuclear sector is concerned: it has gained substantial support in countries which use this technology. However, opposition still prevails in the EU-27, although not by much (45 % to 44 %). The lack of transparency and the need for clear, comprehensive information have also been stressed by the European Nuclear Energy Forum.

2.4 *Community funding*

2.4.1 The Euratom Treaty provides for specific financing for research, development and demonstration in the Framework Programme of the European Atomic Community.

The first programme (indirect actions) concerns the following sectors:

— fusion energy research [5];

— nuclear fission and radiation protection.

The second programme (direct actions) provides for investment for:

— fusion (EUR 1 947 million, including at least EUR 900 million for activities connected with the ITER project);

— nuclear fission and radiation protection (EUR 287 million);

— nuclear activities of the Joint Research Centre (EUR 517 million).

2.4.2 The EIB represents another Community funding instrument that has guaranteed financing to a total of more than EUR 6 589 million in the sector, for both building power stations and disposing of waste, together with the EUR 2 773 million provided by Euratom for the same purposes.

2.4.3 Once the Commission has given the green light, the EIB, when analysing investments, takes into consideration not only the mobilisation of the huge financial resources needed for construction, but also the costs of waste management and decommissioning. However, the internalisation of costs announced by the EIB makes no provision for other indirect costs, such as those arising from external protection of installations by the security forces, or ancillary dismantling work such as for low-water dams built on rivers to ensure a constant flow of water for reactors even during periods of drought.

2.4.4 The different ways of calculating costs and the need for a guaranteed system of ad-hoc dedicated funds are clearly described in the Communication from the Commission *Second Report on the use of financial resources earmarked for the decommissioning of nuclear installations, spent fuel and radioactive waste* [6].

2.4.5 The report highlights the 'distorted' uses made in some Member States of funds earmarked for dismantling and waste management. In some countries, such funds are financed with public resources, which are often used for other purposes. This distorts competition significantly, as these costs should be internalised in accordance with the polluter-pays principle.

2.4.6 The Commission's proposal in 2002 to merge Decisions 270 of 1977 and 179 of 1994, and to increase the level of funding, was not unanimously supported by the Council. Available Euratom funding (EUR 600 million), which can be granted to finance up to a maximum of 20 % of total costs, is not sufficient to meet a number of requests that have not yet been formalised but are still at the stage of preliminary discussion with the Commission.

2.4.7 At the same time, Euratom funding and EIB loans should be used to promote research and applications supporting safe and sustainable development of the nuclear industry. Current measures appear inadequate with respect to the growing need for financing to guarantee high safety standards and reduce risk to a minimum. These funds should be specifically directed towards those countries which have public waste treatment policies.

2.5 *National funding*

2.5.1 The state aid regime does not allow for financing the construction of nuclear plant; whereas public funding is possible and desirable in order to increase security measures, develop transparent and uniform methods for granting licences and selecting sites, and support training and professional development programmes. Regardless of whether new nuclear plants are built or not, it will be essential to have highly specialised engineers and technicians who can guarantee safe long-term management of plants that are in operation and those that are in the decommissioning phase.

2.5.2 Four reactors are currently in construction in Europe (two in Bulgaria, one in Finland and one in France). It is difficult as things are to foresee a substantial increase in this production capacity, particularly where nuclear fission is concerned. A recent UK NIA study confirmed that it could support 70-80 % of a new nuclear programme, with the exception of reactor 'core' components such as the pressure vessel, turbine generators and other key components [7]. The lack of technicians and engineers is the main obstacle to vigorous growth in the sector. This shortage is particularly evident in those Member States where there has been little or no development of nuclear energy. It could be overcome, however, since it takes around ten years from the decision to build a nuclear reactor to its coming on stream, whereas only five years are needed on average to train an engineer.

2.5.3 Substantial investments are needed in technical and scientific training. The younger generation has not been particularly interested in studies relating to the nuclear sector, with the notable exception of those countries which have developed a coherent nuclear programme and so created real career prospects. Scientists, technicians and engineers, and industrial construction

(4) Special Eurobarometer 297 Attitudes towards radioactive waste (June 2008).

(5) P. Vandenplas, G. H. Wolf: 50 years of controlled nuclear fusion in the European Union, Europhysics News, 39, 21 (2008).

(6) COM(2007) 794 final of 12.12.2007.

(7) NIA (Nuclear Industry Association). The UK capability to deliver a new nuclear build programme. 2008 update.

experts will be needed in the near future. It is essential that Member States which use nuclear technology, and especially those that choose to develop it, come up with specific and coherent projects for investing in training.

2.5.4 The Nuclear Energy Forum has stressed the importance of harmonising safety requirements. The CNS (Convention on Nuclear Safety) and IAEA Safety Standards are recognised as basic reference criteria. The Western European Nuclear Regulators' Association (WENRA) plans to implement a harmonised programme between the EU countries and Switzerland by 2010. On the basis of a SWOT analysis it has been proposed that a European directive should be issued on key safety principles for nuclear plants.

3. **Opportunities**

3.1 The issue of nuclear-power use and financing must be seen in the light of climate change resulting from CO_2 emissions. Roughly one third of electricity generation and 15 % of energy consumed in the EU is of nuclear origin, with low CO_2 emissions. Even allowing for the potential increase in use of energy from renewable sources (the other available carbon-free source, which should be resolutely prioritised, along with energy-saving), it would seem extremely difficult to achieve a decrease in CO_2 emissions over the coming decades without maintaining nuclear energy production at current levels.

3.2 Nuclear power is less vulnerable to price fluctuations given the small impact of uranium prices on total costs.

3.3 Diversifying the energy mix increases opportunities, especially for countries that are heavily import-dependent.

3.4 According to data provided by the Commission and some operators, kWh costs from nuclear energy are higher than those from conventional thermal power stations but lower than those from renewable sources. The figures take into account neither the predictable cost of CO_2 emissions certificates, nor partial internalisation of predictable expenses for decontamination and dismantling after decommissioning. For all types of energy source, the method should be adopted of internalising all external costs. According to some operators and older studies [8], the kWh cost from nuclear is lower.

3.5 Duration of fuel reserves. With the same number of power stations as at present and the same reactor technology, known reserves will be able to provide economically viable operation with low CO_2 emissions for an estimated period which varies between a few decades and several centuries [9] [10]. This uncertainty is due to the fact that the 'purest' uranium deposits are gradually being exhausted, with the result that extraction and refining costs will rise as regards use of both energy and chemicals producing greenhouse gases. It should, however, be possible to reduce consumption in absolute terms with the future generation of nuclear power stations, notably breeder reactors. It would be useful to employ thorium as a fuel, since it is more abundant than uranium and offers better neutron yield and absorption, which means that less fuel-enriching is needed per unit of energy produced. In addition, it could supply thermal breeder reactors, considerably reducing the production of radiotoxic waste and plutonium that might be used for military purposes.

4. **Risks**

4.1 *Risk of serious accidents and nuclear fallout*: although developments in reactor technology have minimised the risk with the adoption of numerous control measures, in theory the risk of core fusion cannot be ruled out. Passive safety systems such as core catchers, already used in the EPR reactor being built in Finland, ensure that radioactive leakage is contained even in the highly unlikely event of core fusion. Future 'intrinsic-safety' reactors could eliminate this risk. For example, the European VHTR Raphael Project would guarantee that even in the event of a blockage in the cooling system, there would a gradual thermic progression towards a steady state in which heat dissipation would offset energy production, whereas with current reactors rapid intervention is needed to halt the increase in core temperature.

4.2 *Health risks associated with normal plant operation*: a study of the incidence of leukaemia among children in the vicinity of nuclear power stations between 1990 and 1998 revealed 670 cases, although it did not reveal excessive levels in children living within twenty kilometres of nuclear sites. However, a more recent epidemiological KiKK study carried out in Germany at the initiative of the Federal Office for Radiation Protection (BfS), using a large sample (1 592 cases and 4 735 controls), showed a correlation between the number of cases of cancer in children below the age of 5 and the distance of their homes from nuclear power stations. The authors concluded that the radiation level measured was so low that, according to radiobiological knowledge, the cancer could not be put down to exposure to ionising radiation. An external panel of experts [11] verified the results of the KiKK study. They are reliable and the low radiation level measured points to a need for more in-depth research into whether children might be hypersusceptible to radiation risks and for continuous monitoring of communities located near nuclear plant [12]. In September 2008, the Swiss government's Federal Office of Public Health launched the Canupis study (Childhood Cancer and Nuclear Power Plants in Switzerland) which drew on the results of the

(8) DGEMP- Couts de reference de la production electrique, Ministère de l'économie des finances et de l'indstrie (French Ministry of the Economy, Finance and Industry), December 2003.

(9) Storm van Leeuwen, Nuclear power — the energy balance (2008), www.stormsmith.nl.

(10) World Nuclear Association, www.world-nuclear.org/info/info.html.

(11) Dr Brüske-Hohlfeld, GSF, Neuherberg; Prof. Greiser, BIPS, Bremen; Prof. Hoffmann, Greifswald University; Dr Körblein, Munich Environmental Institute; Prof. Jöckel, Duisburg-Essen University; PD Dr Küchenhoff, Munich LMU; Dr Pflugbeil, Berlin; Dr Scherb, GSF, Neuherberg; Dr Straif, IARC, Lyon; Prof. Walther, Munich University; Prof. Wirth, Wuppertal; Dr Wurzbacher, Munich Environmental Institute.

(12) Mélanie White-Koning, Denis Hémon, Dominique Laurier, Margot Tirmarche, Eric Jougla, Aurélie Goubin, Jacqueline Clave.

German study and an analysis of literature on the subject commissioned by ASN, the French Nuclear safety Authority, following the recommendations of the Vroussos report.

4.3 *Waste*: very few countries have resolved the issue by identifying permanent storage sites. In the United States, the New Mexico site (*Waste Isolation Pilot Plant*), which had been operational since 1999, had to be downgraded as a result of water infiltration which, combined with the rock salt in the mine, had a highly corrosive effect on drums and led to sites in salt formations being considered geologically unstable. In Europe, only Finland and Sweden have announced the identification of final sites. Particular attention will have to be given to the reprocessing of waste. Studies must be continued into permanent waste storage once spent fuel has been reprocessed. The quality of this storage and the treatment of waste are integral components of the safety and security of the fuel cycle.

4.4 *Processing and transport*: further problems have arisen from the way radioactive fuel transport and processing plants have been run: their managers' practices have not in the past been irreproachable, quite unlike those of technicians in nuclear power stations. For example, unsuitable vessels have been used for transport (one sank, although fortunately not when carrying a radioactive cargo) and significant quantities of dangerous material have been discharged into the sea.

4.5 *Geological and hydro-geological risks*: another key issue is the fact that many power stations are situated in earthquake-prone regions. Japan opted to close the Kashiwazaki Kariwa site in the Nigata prefectorate, the world's largest power station, thereby giving up 8 000 MWe of capacity. The closure, following the earthquake of 16 July 2007, cut nuclear energy generation by 25 TWh. Work is currently being carried out to make two reactors operational again.

4.6 *Nuclear proliferation and terrorism*: concern has increased in recent years given the new threat presented by terrorist groups. Genuinely safe plant should be able to withstand the impact of an aircraft without radioactive material escaping.

4.7 *Water*: another vitally important aspect concerns climate change and increasing water shortages. As with all thermal power stations, including coal- and oil-fired and solar thermal plants, the water demand for cooling processes also very high in the case of nuclear power plants, unless the less efficient air cooling technology is used. (In France the water needed for electricity generation — including hydroelectric — accounts for 57 % of total annual water consumption: 19,3 billion cubic metres out of a total 33,7 billion cubic metres. Most of this water is returned (93 %) after cooling of the fission process and electricity generation ([13])). Heating of large amounts of water by nuclear power stations and worrying reductions in surface watercourses and aquifers pose further problems in selecting sites and cause the public to ask questions to which clear answers are needed from the authorities. In some cases, electricity generation has had to be reduced or stopped in times of drought.

([13]) Eau France and IFEN (Institut Français de l'Environnement — French Institute for the Environment) — data relating to consumption in 2004.

4.8 *Lack of raw materials in the EU*: in 2007 only 3 % of its requirements were available inside its borders. Russia is the main supplier, with around 25 % (5 144 tU), followed by Canada (18 %), Niger (17 %) and Australia (15 %). This shows that nuclear energy does not reduce dependence on third countries, although the other suppliers are largely politically stable countries.

4.9 *Access to long-term funding and capital*: the financial resources necessary are without a doubt considerable, but design and construction times, which can exceed 10 years for commissioning of power stations, make investment highly risky. Construction times initially estimated have never been observed: the average time actually taken before the electricity generated is sold is higher than forecasts, resulting, of course, in higher financing costs.

4.10 *Recent incidents*: while this opinion was being drawn up, numerous incidents occurred, one in Slovenia and four in France. The ban in France on using water and eating fish from rivers contaminated by radioactive water has had a negative effect on public opinion in Europe. These incidents, and their very negative media impact, indicate that particular attention must be paid to procedures for maintaining and selecting companies operating in nuclear sites.

5. **The EESC's comments**

5.1 Nuclear-generated electricity is now so important that no replacement can be envisaged in the short term for the essential contribution it makes to the EU's energy balance.

5.2 Funds for the nuclear sector depend more than others on the policy choices of national governments. In fact, this need for a definite and stable legal framework is the first source of uncertainty. There must be a policy to involve the public and make them more aware that they can contribute to the choice on the basis of information that is complete, transparent, understandable and truthful. Only a democratic procedure can ensure that an informed choice is made which will determine the future of the European nuclear industry.

5.3 As noted by the Commission itself, the lack of transparency and information that is scarce and contradictory on issues such as the allocation of dedicated funds for waste disposal and the dismantling of decommissioned power stations increase public uncertainty. The EESC calls upon the Commission to encourage the Member States to launch a campaign for transparency and certainty regarding European energy demand, energy efficiency and the various options, including the nuclear sector.

5.4 The Committee notes that many existing power plants in Europe (both fossil fuel and nuclear powered) will be coming to the end of their lives during the next twenty years, and that this could lead to shortfalls of electricity supply unless substantial new investment is undertaken.

5.5 The Committee has considered in various opinions that the highest priorities in the energy field are to promote energy efficiency more vigorously and to expand the share of renewable energy in electricity production.

5.6 The Committee is aware however that even with maximum effort the expansion of renewables and of energy efficiency are unlikely to be able to fill the whole of the potential gap in electricity supply. In Europe as a whole some new investment will be required both in coal powered generation and in nuclear power plants.

5.7 In both cases the Committee consider it to be fundamentally important that all environmental and safety externalities should be built into the assessment of investment projects and into their operating costs.

5.8 In view of the growing threat of climate change, facilities for carbon capture and storage should be integral to the planning of any new fossil fuel power plants and the costs of this should be built into the assessment and business plans. Similarly, the costs of providing for eventual decommissioning and waste disposal should be built into the assessment and business plans of any new nuclear plant that is permitted. There should be no concealed subsidies for any fully developed energy systems.

5.9 At present, investors and other sources of finance are proving reluctant to commit significant resources to the construction of a new generation of nuclear plants in Europe, because of the many uncertainties about the economic, political and regulatory climate and the long time lag between the heavy investment involved and the economic payback.

5.10 The approach taken by Finland, which has set up a consortium of major users which have purchased most of the electricity generated on a take-or-pay basis at a stable price, should be encouraged and facilitated.

5.11 The Commission is urged to support research and development programmes, especially on fusion and fourth-generation nuclear technology, although it is aware that this will not be commercially available before 2030 [14]. Fourth-generation technology is intended to create a 'clean' nuclear sector that resolves the problems associated with waste management and proliferation, and that further reduces the risk of fallout, with reduced consumption of fissile material. Fourth-generation technology can make an effective contribution to generating hydrogen. The development of fusion energy should be vigorously pursued so that its distinct benefits in terms of safety and resources can be harnessed in the second half of the century.

5.12 The resources available to Euratom with which to provide guarantees for investments and, in consequence, to reduce the financial burden on companies which can make use of the European institutions' extremely high ratings, are blocked, and could be brought into line with the higher costs and inflation that have occurred during the period, without sacrificing other support programmes, for instance on energy efficiency or renewable sources, possibly with additional dedicated means.

5.13 Neither are the available resources or the corresponding research programmes sufficient in the area of waste treatment and protection from ionising radiation. The EESC urges the Commission, the Council and Parliament to provide the Euratom 7FP with further resources — also through joint technological initiatives — for this purpose, as is being done for example in the fields of fuel cells and medicines. The EESC also calls on the Member States to make their contribution with beefed up national research programmes in radiobiology and radiation protection, epidemiology and permanent storage.

5.14 The dedicated nuclear financing model, independent of other framework programmes, should be extended to energy efficiency and renewable energy development programmes.

5.15 Member States should plan forums at national level along the lines of the Nuclear Energy Forum held by the Commission in Prague and Bratislava, focusing on three topics: opportunities, risks, and transparency and information.

5.16 Streamlining the issuing of licences and selection of sites through a single European procedure could undoubtedly enhance investment certainty and commissioning times, but the public would categorically reject European rules less stringent than the national ones. Consideration must be given to the European interest in setting strict and harmonised safety standards, given the transnational nature of the attendant risks (e.g., power stations near national borders). Design and rules could be harmonised for the next generation of reactors.

5.17 Consumers should be able to share the benefits of less costly electricity generation. At present, prices on the power exchange are based on cost of the most expensive method of electricity generation (combined coal-gas cycle). The different sources should be quoted, with differentiated prices.

Brussels, 4 December 2008.

The President of the European Economic and Social Committee

Mario SEPI

The Secretary-General of the European Economic and Social Committee

Martin WESTLAKE

(14) GIF Generation IV International Forum 2008.