Opinion of the European Economic and Social Committee on the 'Communication from the Commission — Nuclear Illustrative Programme presented under Article 40 of the Euratom Treaty for the opinion of the European Economic and Social Committee'

(COM(2016) 177 final)

(2016/C 487/17)

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1. **Conclusions and recommendations**

1.1. In support of the developing Energy Union programme numerous energy-related legislative reviews and initiatives are currently under way and will be presented within the next 12 months. This strategic review could have been expected to articulate the main issues facing nuclear power generation, research and decommissioning as a contribution to this extensive legislative package. However, the PINC (the nuclear illustrative programme) does not offer a clear and comprehensive approach to how the complex future of nuclear power in the European energy mix can be strategically addressed.

1.2. The generation of nuclear power is politically delicate in most Member States and is influenced by fluctuating social and economic issues at national level. The Committee urges the Commission to take this opportunity to propose a clear analytical process and methodology which can offer a consistent, voluntary framework for national decision-making about the role — if any — of nuclear power in the energy mix.

1.3. The EESC is therefore calling for revisions and additions to the draft communication, as detailed in 4.3, to include specific sections on:

— the competitiveness of nuclear power in the short, medium and long term,

— the related economic aspects,

— contribution to security of supply,

— climate change and carbon targets,

— public acceptability, liability for nuclear damages, transparency and effective national dialogue.

1.4. Transparent monitoring is essential to both nuclear safety and public confidence; therefore the EESC proposes that the document should clearly endorse proposals on monitoring and reporting in Member States' national action plans as suggested by the European Nuclear Safety Regulators Group. Greater efforts should be made to include neighbouring non-EU countries.

1.5. Also in relation to public confidence, further reference should be made to extensive work on off-site and cross-border preparation for emergencies (Review of Current Off-site Nuclear Emergency Preparedness and Response Arrangements in EU Member States and Neighbouring Countries. Euratom December 2013) and to the conclusions of the 2016 Nuclear Security Summit, particularly in relation to potential terrorist threats.

1.6. In recognition of the major commitment being made by the EU to research into nuclear fusion power, the inclusion of a road map illustrating its progress towards commercial production would be helpful.

1.7. In the light of the vote by the UK to leave the EU, consideration should be given to the strategic impact of this action and in particular its significance for the Euratom Treaty. The need for deliberation on the potentially far-reaching consequences should be explicitly recognised in the PINC.

2. **Introduction**

2.1. According to Article 40 of the Euratom Treaty, the European Commission shall 'periodically publish illustrative programmes indicating in particular nuclear energy production targets and all the types of investment required for their attainment. The Commission shall obtain the opinion of the Economic and Social Committee on such programmes before their publication' (COM(2003) 370 final). Since 1958 five such nuclear illustrative programmes (PINC) have been published, the last in 2007 and one update in 2008. The final version will be prepared and published as soon as the Commission has received the Opinion of the EESC.

2.2. The Committee, as on previous occasions, values the opportunity to present its opinion on the draft document prior to the Commission presenting a final version to the Council and the European Parliament. The EESC urges the Commission in the strongest possible way to incorporate the recommendations set out in section one of this Opinion, making the PINC a more comprehensive and strategic document and ensuring that it will make a stronger contribution to the Energy Union package.

2.3. Nuclear power is one of the major sources of energy in the EU. The State of the Energy Union 2015 report notes that 'the EU is one of only three major economies that generate more than half of its electricity without producing greenhouse gases, 27 % produced from renewable energy sources and another 27 % produced from nuclear energy'. This report also states that the PINC 'should bring more clarity on long-term nuclear investment needs and on the management of nuclear liabilities' (COM(2015) 572 final).

2.4. The EU's Energy strategy has been extensively developed since the last PINC and is currently a high priority. Targets for 2020, 2030 and 2050 are in place but major variables and uncertainties remain. These include the extent to which the Paris Agreement on climate change will be implemented, the volatility of the international market in fossil fuels, the rate at which new technologies will be applied, which countries are members of the EU, the influence of the global economic outlook and the extent to which the massive foreseen investments in the whole energy chain will be forthcoming.

2.5. Irrespective of EU energy policy the key decisions about the mix of sources providing energy generation remain the prerogative of Member States. EU energy policy can be used as reference for such decisions but energy is politically highly sensitive and is therefore subject to the varying social and political climate at national level. EU policy-making requires a clear analytical process and methodology which can offer a consistent framework for national decision-making. The PINC potentially offers the opportunity to do this for those states considering nuclear power as well as for those with nuclear power and who are assessing its future.

3. **Gist of the draft Communication from the Commission**

3.1. The Commission's communication opens with the statement that 'The PINC provides a basis for discussing how nuclear energy can help achieve the EU's energy objectives' and it concludes 'As a low carbon technology and a significant contributor to security of supply and diversification, nuclear energy is expected to remain an important component of the EU's energy mix in the 2050 horizon'.

3.2. The communication focusses on the investments related to post-Fukushima safety upgrades and to the safe operation of existing facilities. In addition it highlights the estimated financing needs related to nuclear power plants' decommissioning and to the management of radioactive waste and spent fuel.

3.3. 129 nuclear power reactors operate in 14 Member States with new build reactors envisaged in 10 of those states. The EU has the most advanced legally binding standards for nuclear safety worldwide. These are maintained and upgraded by regular revision of the Nuclear Safety Directive ([1]).

3.4. The EU nuclear industry operates in a global market with a value of EUR 3 trillion up to 2050 and is a technology leader directly employing 400 000-500 000 people and facilitating 400 000 additional jobs.

3.5. European companies are heavily involved in global nuclear fuel production, cooperating closely with the Euratom Supply Agency, supplying the needs of the EUs western designed reactors and with a capacity to develop fuel assemblies for Russian design reactors (of which 19 are currently operating in the EU).

3.6. The Commission predicts a decline in the EU's current nuclear generation capacity (120 GWe) up to 2025 with this trend reversing by 2030. Nuclear capacity would remain stable between 95 and 105 GWe by 2050 assuming 90 % of the existing nuclear fleet is replaced in this time. The estimated investment is between EUR 350 and 450 billion, providing generation to the end of the century.

3.7. Cost over-runs and long delays on new projects and differing approaches by national licensing bodies have created investment difficulties. Design standardisation and enhanced cooperation between national regulators are seen as essential planks of future policy.

3.8. Lifetime extension programmes (for 10-20 years) for many EU reactors are in the pipeline, with an estimated cost of EUR 45-50 billion and the regulatory workload involved, in accordance with the amended Nuclear Safety Directive, should be anticipated and planned for.

3.9. 50 reactors are planned to be shut down by 2025. Although the matter is politically sensitive, action and investment on geological disposal and long term management of radioactive waste and related decommissioning issues needs prompt decisions by Member States.

3.10. Significant expertise on the storage and disposal of low and intermediate waste exists and deep geological disposal facilities will become operational in Finland, Sweden and France between 2020 and 2030 for final disposal of high level waste. The potential for sharing this expertise and the possibility of agreeing joint disposal facilities between Member States will bring both efficiencies and safety benefits. This will be enhanced by the establishment of a European centre of excellence.

3.11. Nuclear operators estimate that EUR 253 billion will be required for the costs of decommissioning with EUR 133 billion of dedicated funds identified. Member States are responsible for guaranteeing that the operators' liabilities are fully met and decommissioning takes place in a clear time-frame.

3.12. More coordination is needed in the technical development and marketing of non-power uses of radiation technology. For example, the medical imaging equipment market in Europe alone is worth EUR 20 billion annually and agriculture, industry and research have seen a growing use of this technology. Significant research investment continues in both new generation and modular fission plants and in continuing leadership in fusion research and this is seen as critical to maintain expertise, careers and global influence. This is particularly important as nuclear energy continues to expand globally although not in Europe.

([1]) OJ L 219, 25.7.2014, p. 42.

4. **General comments**

4.1. The Committee has regularly given its opinion on the safety and role of nuclear power in the EU's energy mix ([2]). This communication is the first illustrative review on nuclear from the Commission since Fukushima and although the previous PINC promised to 'increase the frequency of publication of the Nuclear Illustrative Programme' (COM(2007) 565 final) this has not happened. The 2016 PINC — though supported by an extensive staff working document — is half the length of the 2007 communication. The Committee suggests that some items should be added to the PINC in order to have a strategic document in which the contextual factors that shape investment and target setting decisions are discussed.

4.2. The Committee values the extensive analysis of investment in the entire nuclear fuel cycle which the PINC provides, recognising that it defines both the challenges and opportunities faced by the sector. The emphasis on the highest safety standards and the need to ensure comprehensive funding for all aspects of decommissioning is also welcomed. The working document offers considerable detail and the role of continuing research is also noted. Nevertheless, in other areas much has been left unsaid, weakening the strategic value of the document.

4.3. The draft 2016 PINC heralds a significant change in approach by the Commission. Previous PINCs have set the review in the context of the energy challenges facing the EU and the global community. For example the 2007 PINC featured sections not replicated in 2016 which offered clear strategic insight. These should be added to the present proposal, and should cover:

— competitiveness — what are the current and future factors affecting the competitiveness of nuclear power, for example the role of state aid, especially financial and fiscal aid, changes in perspectives on construction costs, capital costs, waste disposal, licencing procedures, lifetime extensions and the relative costs of other energy sources,

— economic aspects — the structure of the energy market remains uncertain, discouraging long term investment, and the economic risks of nuclear power are significant in a period of financial and political uncertainty,

— security of supply — energy demands worldwide are steadily increasing even if they have stabilised or reduced in Europe and the implications of this, and the political and foreign policy aspects, need greater attention. Energy security in particular is an area to which nuclear power can and does contribute with sources of fuel supply (uranium) at present seemingly more secure than oil or gas ([3]),

— climate change — nuclear power contributes half of Europe's low carbon electricity,

— public acceptability — the wide variation across the EU on public attitudes to nuclear power is a little understood reality with significant effects on political acceptability.

All these issues have become more important in the last 9 years but the focus on safety and the fuel cycle dominates the PINC with little elaboration on these areas in either the communication or the staff working document. It neither outlines the nature of the debate on these topics, many of which are contested and controversial (for example, maintaining high standards in sub-contracted work), nor offers a set of guidelines or a strategic approach for the discussion of nuclear power in the energy mix as a whole. This reflects the approach of the Energy Union package where there is a similar reluctance to draw out the implications of a European energy strategy for national debates on the continuing role of nuclear (if any) in the energy mix.

4.4. As noted, the Commission's communication claims to 'provide(s) a basis for discussing how nuclear energy can help achieve the EU's energy objectives' … as … 'an important component of the EU's energy mix in the 2050 horizon'. Such statements cannot be fully supported by the content of this document. Previous illustrative programmes have been a major analytical review of the role of nuclear and offered guidelines for future policy.

([2]) OJ C 341, 21.11.2013, p. 92; OJ C 133, 14.4.2016, p. 25.
([3]) OJ C 182, 4.8.2009, p. 8.

4.5. In particular analysis of the investment needs for nuclear power (clearly a major difficulty in present circumstances) must surely now be set in the context of the total investment required to achieve the Energy Union goals as there are interactions and trade-offs between the investment decisions across all generation technologies and infrastructure.

4.6. In addition there are many additional contextual factors which shape nuclear politics and economics that have not been fully addressed and which are difficult for the Commission to elaborate on as they are subject to ongoing review or reform. These include the functioning of the Emissions Trading System, proposals for capacity mechanism subsidies, the development of the renewables sector, etc.

4.7. At present nuclear energy accounts for 28 % of the domestic production of energy in the EU, and 50 % of its low carbon electricity (Eurostat, May 2015). CO_2 reduction is a vital target in EU and global energy policy. To stay within a 2 °C temperature rise requires reductions in global energy CO_2 emissions averaging 5,5 % per year between 2030 and 2050. Achieving the EU's contribution to this was outlined in the Energy Roadmap 2050 which took a multi-scenario approach to how the energy mix would vary depending on various political, economic and social factors (COM(2011) 885 final). The communication assumes, based on the figures supplied by Member States, a nuclear capacity of around 100 GWe in 2050 but in the light of the current debate this assumption can command little certainty.

4.8. The Committee notes the recent example of Sweden, announced subsequent to the publication of the PINC and therefore not included, where a commitment was made to gradually replace decommissioned power plants with ten new nuclear reactors and in parallel to adopt measures to ensure an energy supply from 100 % renewables by 2040 (Financial Times 10 June 2016). Having both a strong RES policy and an additional capacity to supply low carbon energy to neighbours is, in this case, politically acceptable to all parties and consequently strategically significant in the European context. The document should therefore be updated to take this into account.

4.9. The EESC has consistently argued over many years for a more strategic approach to energy issues and greater emphasis on a far-reaching public dialogue on energy generation and use ([4]). Technology is not value free and energy technology involves a wide range of ethical, societal, and political judgements. Member States have discretion in the composition of their energy mix, only half have operating nuclear power plants and a polarisation of views on nuclear power has taken place since the last PINC. This important cyclical review document would be enhanced by an objective presentation of the topical and high profile issues involved in 'discussing how nuclear energy can help achieve the EU's energy objectives'. Therefore it is suggested that a number of new sections are included in the final document, as set out in 4.3, and that the strategy as a whole takes greater account of specific comments 5.3.1-5.3.4 below.

5. **Specific comments**

5.1. The document emphasises the importance of better national coordination between Member States, improved cooperation between stakeholders and greater transparency and public participation in nuclear issues. The important role of the European Nuclear Safety Regulators Group (ENSREG) is noted in this respect as well as continuing to 'promote the dialogue between stakeholders in the European Nuclear Energy Forum' (ENEF). In December 2015, ENSREG issued a statement on 'the progress in the implementation of post-Fukushima National Action Plans (NAcPs)' in which it noted that the status of implementation differs and that the rate of safety upgrade implementation should be strengthened to target agreed implementation deadlines. It recommended that 'a status report from each participating country on the implementation of the NAcPs should be updated and published periodically to ensure a transparent monitoring with the aim of publishing a report on the implementation in 2017' (ENSREG Fourth Report November 2015). The EESC suggests that the Commission should include an endorsement of this recommendation in the PINC.

([4]) OJ C 291, 4.9.2015, p. 8.

5.2. The communication touches on relations with nuclear states neighbouring the EU and the EESC believes that the extension of active engagement with Belarus in particular would be helpful in resolving concerns about transparency and safety that have arisen over the construction in Ostrovets of the country's first nuclear reactor. Links through ENSREG should be given priority.

5.3. Concerning dialogue and transparency generally the EESC notes that, in practice, the role, resources, capacity and status of ENEF have been considerably reduced in the last 2 years. It is essential that there is further clarification of the key issues facing the dialogue about European nuclear policy as well as a common framework being proposed for discussion at national level. This is now unlikely to be taken forward within ENEF and is missing from the PINC. Such a framework would also aid the future governance of the Energy Union and should be applied consistently to all primary energy sources. To aid this clarification the PINC should therefore contain specific sections outlining the implications and relevance for nuclear investment policy. These topics, detailed in the following four paragraphs, are vital areas of debate essential to any strategic vision.

5.3.1. *The move to electricity and the degree to which a consistent supply of electricity can be assured from primary sources*. On the one hand nuclear energy can assist energy security as large volumes of predictable electricity can be generated continuously for extended periods and it can make a positive contribution to the stable functioning of electricity systems (e.g. maintaining grid frequency). On the other hand capital construction costs are high, new safety requirements are demanding, finance is uncertain and future market conditions largely unpredictable. These are issues which face every Member State with a nuclear generation capacity and could be critical in how and whether realistic national plans contributing to overall EU energy and climate targets can be met. The PINC should relate to a common framework for discussion of these issues, as the Commission has proposed in other strategic communications on energy, and put forward a balanced analysis of the role of nuclear energy.

5.3.2. *Public knowledge, attitudes and awareness of risk in energy generation*. On the one hand nuclear safety, the impacts of Chernobyl and Fukushima and the outstanding questions concerning decommissioning and radioactive waste disposal are issues of grave public concern in some countries. On the other hand there are significant and often understated negative factors attached to other primary energy sources. The EESC has consistently emphasised the vital role of public understanding of the energy 'dilemma' — essentially how to balance the interconnected and sometimes conflicting objectives of energy security, affordability and environmental sustainability. Political will is largely shaped by public attitudes and the low level of comprehensive energy awareness can result in sub-optimal political decision making. More resources and a supporting legal framework enabling, for example, local information committees as established in France, would be helpful.

5.3.3. *A methodology for assessing costs and competitiveness*. Affordable low carbon energy is essential in achieving agreed climate and energy targets, yet this area is sheltered from market competition. Neither is there a standard or acceptable methodology in use by which Member States assess future costs of alternatives in their power generation mix, prior to taking a political decision (which will be influenced by other factors).

5.3.4. *The relevance of an active research and power generation base in market, technological and safety leadership*. How important is it to retain a significant and evolving nuclear generation industry if employment and European influence and leadership in an industry which is expanding globally is to be maintained (US Energy Information Administration May 2016 — World nuclear generation to double by 2040)? For example, China intends to double its nuclear capacity to at least 58 GWe by 2020-21, with a further increase to 150 GWe by 2030. The importance of high quality, well-paid jobs in the EU is noted and were these to be phased out then a programme assuring a fair and supported transition would need to be in place.

5.4. The most significant element of EU nuclear research funding is committed to the development of the joint nuclear fusion programme (ITER). The EFDA (European Fusion Development Agreement) road map describes the route from present fusion experiments to a demonstration fusion power plant producing net electricity for the grid. The EESC asks the Commission to take into account a potential supply of electricity from fusion power plants in all post-2050 cost-effective energy scenarios. In addition continuing support for research into 4th generation reactors, with their potential for cost reductions and significantly reducing high level waste, should be encouraged.

5.5. The draft proposal was prepared in advance of the vote by the UK to leave the European Union and current legal opinion suggests that leaving the EU also means leaving Euratom. This has major strategic implications, not least for 2030 energy targets, but also for research, regulatory, supply chain and safety cooperation. This issue therefore needs to be recognised by this draft proposal, even though anticipating specific outcomes at this stage is problematic.

Brussels, 22 September 2016.

The President
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