IFIEC Position Paper on Nuclear Power

Introduction and highlights

1. IFIEC represents the interests of industrial energy consumers in Europe for whom energy is a significant component of production costs. For these enterprises, energy prices, security of supply and sustainability are therefore a key factor of competitiveness.

2. IFIEC strongly supports the key objectives of the European Energy Policy:
   - Sustainability, especially regarding climate change
   - Security of supply
   - Competitiveness

3. IFIEC is concerned about the competitiveness of the European industry.[i] Indeed, the availability of affordable energy is a key point for maintaining competitiveness. Nevertheless, along with the strong increase of fossil fuels prices and the development of ETS (not to mention the post 2012 current discussions on auctioning), electricity prices have tremendously increased since 2003, severely impacting the competitiveness of the European industry.

4. Therefore, and as developed in this position paper, IFIEC supports the conclusions of the ENEF working group “opportunities” and believes that a further development of nuclear power, which is anyway necessary to meet the objectives of the EC regarding sustainability and security of supply is indispensable to maintain a competitive industry in Europe.

5. Yet, IFIEC does not believe that the present electricity market design will allow industrial consumers to benefit from nuclear competitive advantage and strongly supports ENEF works on how to translate this competitive advantage into prices to end consumers.

6. IFIEC believes that long-term partnerships or contracts between nuclear power producers and industrial consumers, particularly energy intensive ones, are a promising way to facilitate the high investments needed in new production plants and to comfort the competitiveness European industry. IFIEC will continue to participate to the ENEF working group on the opportunities of nuclear energy but already calls for rapid decisions and concerted actions from policy makers, investors, finance providers and customers to develop such long-term partnerships and contracts

Climate change and sustainable development

7. The March 2007 European Council has reaffirmed the leading role the European Union in the reduction of greenhouse gases to limit climate change. The present objective is a reduction of 20% of the emissions in 2020 vs 1990. It could even be increased to 30% in case of an international agreement.

8. The estimates of CO2 emissions of the entire nuclear life cycle are around 15 g/kWh of electricity generated.[ii] This compares with ~ 385 g/kWh for lifecycle CO2 emissions from a gas-fired electricity power station, and ~755 g/kWh from coal-fired electricity. This clearly shows that nuclear energy, among conventional technologies, is by far one of the lowest emitter of carbon dioxide per kWh.

200 Avenue Louise Box 132 B- 1050 Brussels **tel**: 32 2 542 06 87 **fax**: 32 2 542 06 92 **e-mail**: ifieceurope@ifieceurope.org **web**: www.ifieceurope.org
a.i.s.b.l. NI 436 343 513

9. In its latest "World Energy Outlook", the International Energy Agency has studied various scenarios regarding energy demand, energy production and their impact on climate change. In its reference scenario (= no new energy policy instruments being introduced), the share of nuclear power in the world electricity fuel mix is expected to decrease from a current 15% to around 8% in 2030.

10. On the other hand, the IEA scenario approach incorporates a "stabilisation" scenario assessing the implications of an acceptable level of global temperatures increase for energy generation. In this scenario, taking into account all realistically available technologies, the nuclear power share in the world electricity fuel mix should increase from today 15% to 22% in 2030. This amount is equal to a net annual increase of about 30 GW in nuclear capacity installed. According to the IEA, this increase in nuclear power complements and does not replace immense investments in wind (50 GW per annum), hydro (50 GW per annum), CHP biomass and waste (16 GW per annum) and other renewable (12 GW per annum).

11. Applying such scenario at EU level results in the following:
    - EU is the largest nuclear electricity producer in the world with about 1.000TWh per year, but EU nuclear electricity production is expected to decrease to around 600TWh per year in 2030, if nothing is done to change current trend (IEA reference scenario);
    - for Europe to achieve practically the targets included in such stabilisation scenario, nuclear power generation should increase from today's 1.000TWh/y to around 1.500TWh/y by 2030. To reach such a production, we need to build up an average of 4 new reactors per year until 2030. This will require considerable investments.

12. It is thus clear that the nuclear energy share in EU electricity mix must increase to be able to meet the climate change goals. This is complementary to the need for more energy efficiency and renewable energy technologies.

13. Moreover, oil and natural gas are essential feedstocks for some industries, as chemicals for instance. Therefore, as we have limited reserves of fossil fuels, developing nuclear power production is way to keep fossil fuels for higher added value applications while having a more sustainable fuel mix for electricity production. .

14. Therefore, in IFIEC's opinion, the European Union will not meet its objectives in terms of reduction of GHG emissions if nuclear energy is not further developed. IFIEC emphasizes that it must now be recognised openly that nuclear energy must be promoted as part of the solution for the next phase of the Kyoto Protocol (post-2012) and on an equal footing with other methods of carbon abatement.

Security of supply

Diversification of primary energy mix

13. The European Union has to import an ever-growing part of its energy needs. The domestic production of oil and gas is declining, as is the production in Norway.

14. The "Energy Policy for Europe" proposed by the European Commission to the European Council and the European Parliament, shows that "business as usual" leads to an import dependence on fossil fuels of the EU25 going from 59% in 2000 to 84% in 2030.[iii] The enlargement to EU27 did not bring major changes to these figures. Yet, for both economical and political reasons, it is crucial to limit this import dependence.

15. More than 80% of global uranium reserves are located in four countries: Australia, Canada, Kazakhstan and South Africa. Importing uranium from these countries allows Europe to diversify its suppliers and to preserve security of fuel supply. Moreover, uranium can be found in countries with which the EU maintains stable, intensive and diversified trade relations, involving less political risk. Furthermore, it is much easier to build and maintain strategic storages of uranium than for oil and gas.

16. In addition, raw uranium supply (before enrichment) only represents a small portion of the total electricity generation costs. This means that any further increase of uranium price would have a much lower impact on the electricity generation cost than a similar increase of oil or gas price. Developing nuclear power generation is thus a way to limit the exposure of the European economy to fossil fuels price risk.

17. Therefore, even though the European Union would still have to rely on imports of uranium, developing nuclear power is a way to increase the security of supply by diversifying its suppliers and limiting the share of imports from politically unstable countries.

Supply and demand balance

18. To ensure the balance between electricity supply and demand at any time and thus to ensure a reliable supply all over Europe, it is essential to have a diversified production portfolio.

19. In a balanced production portfolio, producers must have enough baseload, semi-base and peak productions. While natural gas power plants provide the flexibility to compensate renewable energy fluctuations, nuclear production is an efficient, predictable and reliable source to supply the significant part of the load diagram identified as baseload. Investing in nuclear production is therefore necessary to ensure a balanced production portfolio.

20. Most industries and specially the energy intensive sectors consume large quantities of baseload power because they are operating 24hr per day and 365 days per year. Baseload power demand requires reliable baseload power production, such as nuclear provides.

Competitiveness

21. Nuclear energy production is a highly capital intensive activity and therefore a significant part of the unit cost relates to depreciation on the initial investment. This makes production costs highly predictable over a long term. Despite the high investment costs, and even including the dismantling costs, thanks to the very low variable (fuel) costs, the final unit cost of nuclear energy is currently lower than the unit cost of fossil energy. With the sharp increase of fossil fuel prices and the development of ETS in Europe, nuclear energy is now and will remain very competitive in terms of production cost.

22. To be competitive, energy intensive consumers need low, predictable and stable energy prices , . This is why, for industrial consumers, nuclear power production can be considered as the most competitive way to produce electricity in the coming decades, as long as they can benefit from it.

23. A study made by the Institute of Energy Economics at the University of Cologne, shows that the planned phase-out of nuclear power plants will further increase electricity prices, CO2-prices and CO2-emissions.[iv] Because of the significant impact these higher electricity prices would have on the European industry, instead of a phase out, Europe needs to increase investments in nuclear power, in order to limit the loss of competitiveness of the European economy and even to boost it

Conditions for the development of nuclear power production

24. Despite all advantages mentioned above, nuclear power production cannot be developed anywhere in the world. Nuclear power production involves some specific risks related to safety and waste management. Europe has a very stable political framework and a strong and independent framework of regulations and control of nuclear operators, which ensure the best possible management of these issues.

25. In addition, Europe has a long and successful experience with nuclear energy in terms of safety and technology development:
    - Only the safest nuclear technologies have been and will be applied in Europe, and European designed nuclear power plants have an excellent safety record;
    - New generations of reactors are expected to reduce waste in the coming years;

- Europe has important electricity producers who have developed a well-known expertise in investing in and operating nuclear power plants;
- All EU member states have undersigned the Euratom treaty and the IAEA nuclear safety and wastes management conventions. Regulations have been developed and implemented in each country;
- Transparency and public information on nuclear energy have improved over the last years.

26. The excellence of the know-how developed in Europe in investing in and running nuclear power plant is a real advantage.

27. Moreover, as nuclear power production is highly capital-intensive, investors need to have a perspective of long term political stability, a stable regulatory framework and a positive financial environment. In Europe, investors can find all this.

28. Last but not least, nuclear power development needs public acceptance, which is currently missing in many European countries. IFIEC believes though that, considering the challenges the European Union faces regarding security of supply and climate change, more initiatives should be taken by policy makers at national and European levels to promote nuclear power generation and, in the end, it should result in a shared consensus. IFIEC strongly supports these initiatives to improve public acceptance.

Nuclear and industrial development

29. As mentioned above, development of nuclear energy is extremely capital intensive and therefore needs predictability. In parallel, industrial energy intensive consumers offer a stable and predictable baseload consumption that perfectly fits to base load production and are prepared to enter long term, cost-based commitments for their consumption. Such long-term power purchase commitments by large baseload industrial users are ideal instruments to cope with the predictability requirement of investors in nuclear energy and to limit the “market risk” for producers.

30. On the other hand, with such long term commitments industrial consumers can secure access to a competitive and predictable price on a long term, which is essential for the sustainability of industrial activities in Europe.

31. IFIEC Europe strongly believes that partnerships between nuclear energy producers and large industrial companies aiming at developing nuclear power production is a promising way to meet the challenge of competitiveness, global warming and growing demand for power.

32. Such partnerships could take different forms:

- The industrial consumer can hold shares or directly invest in nuclear projects as in Russia (partnerships between aluminium and nuclear companies) or in Finland: (Fennovoima project promoted by a consortium of industrial and energy companies);
- Long-term partnerships or contracts with more or less risk sharing (ex take or pay), based on nuclear projects, as in Finland (EPR output sold at production cost to TVO shareholders) or in France (Exeltium project of consortium of electricity intensive consumers).

These examples show that there is a good potential for a further development of similar schemes, which secure investments.

33. IFIEC believes that public acceptance of nuclear should be reinforced with projects that openly promote and preserve the welfare and employment of the European economy.

34. Decision makers at EU level should therefore encourage and facilitate industrial development based on nuclear energy competitiveness and long-term partnerships or contracts as described above. IFIEC will strongly support EU initiatives towards this goal.

October 2008

[i] Brussels European Council, Presidency Conclusions, 8/9 March 2007, p.11

[ii] Meeting the energy challenge, A white paper on nuclear power, BERR, January 2008, p.48

[iii] Communication from the Commission to the European Council and the European Parliament - an energy policy for Europe, COM/2007/0001 final

[iv] Nuclear power in alternative policy scenarios, A German Perspective, Institute of Energy Economics, University of Cologne (EWI), Germany, 13 December 2007, SESSA Conference