COMMENTS OF **ROMANIA** to the
ISSUES PAPER No 10

[…]

Targets

1. Maintaining a high level of safety and security

The priority is maintaining a high level of safety and security (current fleet, LTO, new-build). This involves organisational, operational and regulatory aspects, as well as further research & innovation, the latter often depending on the availability of research infrastructures of pan- European relevance. Relevant targets are:

- by August 2017, transposition by MS of the Nuclear Safety Directive, followed by timely realisation of the new 'Nuclear Safety Objective' through a clear schedule for implementation;

- by 2020, availability of conclusive research findings on (i) ageing of structures, materials and components (LTO of NPPs and extended spent fuel storage) and (ii) more robust and accident-resistant designs (passive systems, accident-tolerant fuels, improved containment designs and protection strategies);

- by 2020, implementation by MS of all actions to improve nuclear safety as follow-up to the stress tests[1];

- optimisation of NPP operation as a function of predicted demand, and integration with more intermittent suppliers in evolving electricity grids: development of small modular reactors |an other solutions for the adaptation to the market's demands.

Comment [A1]: Could be referred to presem reactors and new concepts.
Better to have a differentiated target in relatioi the innovative reactors.

- observance of strict non-proliferation regime and physical protection of nuclear materials and facilities.

2. Radioactive waste management and decommissioning

In line with obligations under the spent fuel / radioactive waste Directive in particular, MS are putting in place and carrying out national programmes, including necessary research. Key target is, by 2030, the operation in Europe of the world's first deep geological repositories for spent nuclear fuel and/or heat-generating high-level radioactive waste.

-_ By 2030, the development of a world-leading decommissioning sector, building on the EU's safety culture and know-how in waste management.

By 2020, validation of the safety, feasibility and technologies for different extended storage of irradiated fuel as interim solutions for, at least, the next 50 years.

1 ENSREG: Compilation of recommendations and suggestions - Peer review of stress tests performed on European nuclear power plants (http://www.ensreg.eu/sites/default/files/Compilation%20of%20Recommendationsl 0.pdf)

3. Advanced and innovative fission reactors

Towards 2050 the availability of designs offering increased uranium resource efficiency and lower long-lived waste production may become attractive for utilities, and taking into account the increasing requirement for more flexible energy sources and recent MS initiatives in this regard, small modular reactors (SMR) and co-generation plants may develop on a shorter timescale:

- licensed SMR design(s) available in the EU by 2025, with operating plant(s) by 2030;
- at least one Generation-IV demonstrator fast reactor operating in Europe by 2030, including associated fuel cycle facilities (pilot fuel fabrication and processing plants): at least detailed design and associated infrastructure (testing, qualification, validation and verification) for the other demonstrators will be available:

4. Fusion

Successful ITER construction and operation in line with agreed baseline, and progress to fusion
electricity in line with European roadmap and EUROfusion Joint Programme (see Annex 1 – targets to be further developed following publication of revised ITER baseline and revised European roadmap).

Comment [A2]: No realistic vision! What kind of progress to fusion electricity until 2050? How many MWh to be produced?
The document can: (1) eliminate fusion from policy and this kind of assertions; (2) extend the timeline of the policy until the fusion will certainly have a contribution on the market.

Cross-cutting challenges

To achieve the above top-level targets, and to enable nuclear to remain a safe and competitive option in the future energy mix, a number of cross-cutting challenges need to be addressed that also involve concerted efforts amongst stakeholders and MS, in particular:

- **stable / predictable investment conditions**, which for new build means the availability of appropriate financing schemes such as contracts for difference, an effective supply chain and a more appropriate carbon price[2];
- **diversification of nuclear fuel supplies**, in line with the objectives outlined in the Energy Union Communication (see footnote 3) and the European Energy Security Strategy Communication[3];
- availability of a **trained workforce**, including the education and training of scientists, engineers and other skilled workers, e.g. benefitting from a European Credit System for Vocational Education and Training (ECVET) but also ERC, MSCA or ERASMUS+ grants; cooperation with E&T system in the building of competences needed by the implementation of the new nuclear systems (GenIII, GenIV);
- **harmonisation of licensing rules and standards**, including mutual recognition by regulatory authorities, streamlining of design approval and harmonised classification schemes; develop the licensing framework for new nuclear systems.
- ensuring **synergy between safety, security and safeguards;**
- **standardisation of reactor codes**, enabling a common reference to be established between all

Comment [A3]: Appropriate measures, methods and tools to guarantee the availability sufficient workforce with the required training level are necessary to be mentioned.

2 For recent information on cost of nuclear electricity, from new-build Generation-III / III+ and LTO Generation-II, refer to, for instance, (i) William D. D'haeseleer *"Synthesis on the Economics of Nuclear Energy*", Study for the European Commission, DG Energy, Contract N° ENER/2012/NUCL/SI2.643067, November 27, 2013 (https://www.mech.kuleuven.be/en/tme/research/energy_environment/Pdf/wpen2013-14.pdf) and (ii) *Energy Technology Reference Indicator projections for 2010-2050* (https://setis.ec.europa.eu/publications/irc-setis- reports/etri-2014).
3 COM(2014)330 final, 25/5/2014 (http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52014DC0330&qid=1407855611566)

actors involved in the design, construction and licensing of nuclear facilities;

- a conducive **socio-political environment**;
- availability of **state-of-the-art research infrastructures** (in particular for materials research, including irradiation facilities, research reactors, hot cells, etc.); develop dedicated research infrastructure for the development of new nuclear systems, including the support for licensing activities.

  availability of **all potential EU funding options,** e.g. structural and cohesion funds, InnovFin, EFSI (European Fund for Strategic Investments), ESIF (European Structural and Investment Funds) and possible Euratom loans, with established mechanisms such as ESFRI remaining important in the setting-up of collaborations between MS in the development of new research infrastructures.

- create the legal conditions to allow ERIC as a legal entity for nuclear infrastructure management

Regarding the exploitation and development of major research infrastructures, including demonstrator facilities, the European fusion research programme (implemented by EUROfusion) has shown the **effectiveness of joint programming** based on a detailed and resource-loaded roadmap,with clear milestones and deliverables, a risk register, coordinated use of and access to all priority facilities and centralised programme management.

Finally, though the achieving of the above targets will contribute significantly to maintaining **European technological leadership** in a number of areas, in line with the objective stated in the Energy Union Communication, **it will not be easy for Europe to retain leadership in all areas**, especially in view of the increase in nuclear generating capacity in the rest of the world. This underlines the **importance of international cooperation**, especially in areas such as development of advanced and innovative reactors.

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