Strategic targets agreed by research and industry stakeholders and interested Member States

1. Safety
   - 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: implementation by MS of relevant actions to improve nuclear safety as follow-up to the stress tests[1]; e.g. agreement on how to manage equipment obsolescence in older plants; validation of safety approach and feasibility of storage solutions for irradiated nuclear fuel;
   - by 2025, availability of robust research findings on (i) ageing of structures, materials and components (in particular LTO of NPPs) and (ii) more robust and accident-resistant designs (e.g. passive systems, accident-tolerant fuels, improved containment designs, etc.).

2. Radioactive waste management and decommissioning
   - By 2025, 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, including through R&D on characterisation and conditioning of waste, building on the EU's safety culture and knowhow in waste management.

3. Efficiency and competitiveness aspects *(of interest only to countries wishing to maintain nuclear in their low-carbon energy mix over the longer term thereby allowing innovation in safety systems)*
   - Current technology[2]
   - Innovative emerging technologies – concerns increased efficiency & competitiveness and enhanced safety through design:
     - By 2025, licensed SMR and/or co-generation (V)HTR design(s) available in the EU, with operating demonstrator(s) by 2030;
     - by 2030, at least one Generation-IV demonstrator fast reactor in Europe, including associated fuel cycle facilities.

4. Fusion *('implementation plan' already largely in place in view of ITER and the fusion roadmap)*
   - ITER construction and operation in line with new baseline;
   - DEMO design and construction, and progress towards eventual fusion power plants, in line with the fusion roadmap.

R&I actions to be carried out in order to reach the fission-related targets are expected to be supported primarily through national programmes of interested Member States and by industry. It should be recalled that financial support (if any) via the Euratom Research and Training Programme will continue to be restricted to research addressing safety, waste management, radiation protection as well as education and training, in accordance with the underlying legal framework[3].

[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).

[2] For recent information on cost of nuclear electricity, from new-build Gen-III / III+ and LTO Gen-II, refer to, e.g., (i) William D. D'haeseleer *"Synthesis on the Economics of Nuclear Energy"*, Study for the EC, DG Energy, Contract N° ENER/2012/NUCL/SI2.643067, 27 November, 2013 (https://www.mech.kuleuven.be/en/tme/research/energy_environment/Pdf/wpen2013-14.pdf) (ii) *Energy Technology Reference Indicator projections for 2010-2050* (https://setis.ec.europa.eu/publications/jrc-setis-reports/etri-2014).

[3] Council Regulation (EURATOM) No 1314/2013 of 16 December 2013 on the Research and Training Programme of the European Atomic Energy Community (2014-2018) complementing the Horizon 2020 Framework Programme for Research and Innovation, OJ L347, 20/12/2013, p.948.