

JAEA Issues 2100 Vision: Nuclear to Account for About 70% of Generated Electricity

The Japan Atomic Energy Agency (JAEA) has formulated its “2100 Nuclear Vision: Proposal toward a Low-Carbon Society,” presenting Japan’s energy supply-and-demand scenario through the year 2100. The nuclear component share of generated electricity in 2100 is expected to be 67%, combining both nuclear fission and fusion reactors. The aim is to reduce CO₂ emissions by about 90% from current levels.

The proposal includes four major points. First, the greater use of electricity and hydrogen will be promoted on the demand side, particularly improved efficiency in the transportation field, while renewable and nuclear energies are to be actively introduced on the supply side. Second, nuclear energy will be used not only for power generation but also as a heat source in the production of hydrogen. Third, final energy consumption will be reduced to about 60% of current levels by 2100, with the approximate component shares of each type of energy to be 60% for electricity (now 25%), 30% for fossil fuels (now 75%), and 10% for hydrogen. Fourth, the approximate component shares in primary energy supply will be shifted to 60% for nuclear (now 10%), 30% for fossil fuels (now 85%), and 10% for renewable energies (now 5%).

The total amount of generated electricity in 2100 is expected to reach around 1,700TWh, with nuclear accounting for about 67%, of which 18% will come from light water reactors (LWRs), 35% from fast breeder reactors (FBRs), and 14% from fusion reactors. The installed capacity is expected to be about 370GW, with nuclear making up about 40% (of which 10% will come from LWRs, 21% from FBRs, and 9% from fusion reactors). By the year 2100, 120 high-temperature gas-cooled reactors (HTGRs) will be in use in the production of hydrogen, generating a thermal output of 72GW.

Editor: Mio Kimuro, JAIF