Future Outlook

Country: CHINA Reporting Year: 2013

Outlook for the year: 2030

Gross Nuclear Capacity (MW):	103000
Assumptions:	

Total Waste "as dispo" Volume in Storage (m^3):	31000
Total Waste Volume in Disposal (m^3):	70400
Assumptions:	1) Amounts of conditioned solid LILWs in disposable conditioned form, arising from the operating nuclear units, are estimated on the basis of the total amount and operating time length experienced previously. Units of model M310,EPR and AP1000 currently under construction are expected to generate solid LILWs each at a rate of 50 m3/a in disposable conditioned form. 2) By the end of 2030, LILWs arising from research reactor, uranium enrichment and fuel components manufacture, nuclear technology application would have been conditioned to disposable extent. Thus, the total amounts of disposal conditioned solid LILW can be estimated in terms of 100 m3/a for research reactor, 80 m3/a for enrichment and manufacture and 90 m3/a for nuclear technology application. 3) Of radioactive waste arising from research reactor, uranium enrichment and fuel components manufacture, nuclear technology application by the end of 2030, 80% would be to have sent for disposal and 20 in storage at site where it was generated. Before disposal, 10% arisings from nuclear technology application would have been cleared.

Total Spent Fuel in Storage (tHM):	29900
Total Spent Fuel in Disposal (tHM):	
Assumptions:	1) The current spent fuel amount is estimated on basis of the previous gross amount produced and total operating time length experienced. The arisings from EPR and AP1000 units will be estimated in terms of (21-22) t/a. The estimated amounts of spent fuel would be1290 MTHM for 2020 and 1900 MTHM for 2025, respectively. 2) By the end of 2030, spent fuel arising from CANDU reactors could be sent to away-from-reactor dry storage facilities after 6-year storage in pool, spent fuel arising from other nuclear units could be sent to reprocessing plant after 8-year storage in pool and the LILWs from nuclear units could be sent to solid LILW disposal site after being conditioned and 5-year at-reactor storage.

Remaining Disposal Capacity for Volume of Waste (m3):	140000
Assumptions:	

Remaining Disposal Capacity for Spent Fuel (tHM):	0
Assumptions:	

Outlook for the year: 2050

Gross Nuclear Capacity (MW):	175000

Future Outlook

Country: CHINA Reporting Year: 2013

Assumptions:	1) Annual average GDP growth rates (AX) for the years to come are projected to be 7.5% for period 2014-2015, 7.0% for 2016-2020 and 4.5% for 2021-2050, respectively. 2) Electricity elasticity coefficients (b) used for projection of electrical energy generated are 0.90 for period 2014-2015 and 0.75 for 2016-2020, respectively, then slowing to 0.40 for 2021-2050 (in industrialized stage). 3) Equation b=AY/AX is used for projection of annual average expansion rate (AY) of electrical energy generated, which are 6.75% for period 2014-2015 and 5.25% for 2016-2020, respectively, then slowing to 1.80% for 2021-2050 (in industrialized stage). 4) Accordingly, it is projected that the total electrical energy generated will reach at about 7720 TWh in 2020, with per caput 5420 kWh a-1 and will be at the level of developed countries in 2050, about 13200 TWh, with per caput 9100 kWh a-1. 5) Annual electrical energy generated by nuclear means in 2050 will reach at 1320 TWh, supplying about 10% of the total electrical energy generated in China at that time. 6) Average loading factor for nuclear units is 86%. 7) The total nuclear installed capacity will be 175 GW in 2050, with a total of 175 nuclear units in operation.

Total Waste "as dispo" Volume in Storage (m^3):	63200
Total Waste Volume in Disposal (m^3):	264100
Assumptions:	

Future Outlook

Country: CHINA Reporting Year: 2013

	1) Amounts of conditioned solid LILWs in disposable conditioned form, arising from the operating nuclear units, are estimated on the basis of the total amount and operating time length experienced previously. Units of model M310,EPR and AP1000 currently under construction are expected to generate solid LILWs each at a rate of 50 m3/a in disposable conditioned form. 2) From 2031 to 2050, LILWs from nuclear units could be sent to solid LILW disposal site after being conditioned and 5-year at-reactor storage. 3) 1 MTHM of spent fuel arising from nuclear power reactors is expected to generate 0.5 m3 solid radioactive waste, including 0.15 m3 vitrification form and 0.35 m3 aradioactive waste (considered as solid HLW), required deep geological disposal repository and simultaneously 1.4 m3 cement solidification LLW. 4) The strategy of immediate decommissioning is implemented for nuclear units, needing 5 years of shutdown period. The time period from the end of shutdown period to completion of decommissioning will be 10 years. 5) To decommission a 1000 MWe unit will generate about 7,600 m3 of solid LILW and 2700 m3 of liquid LILW. Solid waste arising from liquid waste solidification will be 5,400 m3, which is estimated by using a volume enlargement of 1:2. As a result, decommissioning a 1000 MWe unit will generate about 130,000 m3 of solid LILW requiring disposal. The solid LILW generated in a year when decommissioning is ongoing will be sent for direct disposal. 6) From 2031 and 2050, LILWs arising from research reactor, uranium enrichment and fuel components manufacture, nuclear technology application would have been conditioned to disposable extent. Thus, the total amounts of disposal conditioned solid LILW can be estimated in terms of 100 m3/a for research reactor, 80 m3/a for enrichment and manufacture and 90 m3/a for nuclear technology application. 7) Of radioactive waste arising from research reactor, uranium enrichment and fuel components manufacture, nuclear technology applicationfrom 2031 to 2050, 80% would be to have sent for disposal and 20 in storage at site where it was generated. Before disposal, 10% arisings from nuclear technology application would have been cleared.

Total Spent Fuel in Storage (tHM):	76900
Total Spent Fuel in Disposal (tHM):	
Assumptions:	1) From 2031 to 2050, spent fuel arising from CANDU reactors could be sent to away-from-reactor dry storage facilities after 6-year storage in pool, spent fuel arising from other nuclear units could be sent to reprocessing plant after 8-year storage in pool. 2) PWR-generated spent fuel would be undergoing reprocessing; a large-sized commercial SF reprocessing plant is due to be completed in 2030 with a treatment capacity of 800 t/a, which is expected to enter operation in 2031.

Remaining Disposal Capacity for Volume of Waste (m3):	200000
Assumptions:	

Remaining Disposal Capacity for Spent Fuel (tHM):	0
Assumptions:	

Future Outlook

Country: CHINA Reporting Year: 2013

Outlook for the year: 2100

Data not available.