| State | Location | Units | Capacity (MW) |
|---|---|---|---|
| | | TAPS-3 | 540 |
| | | TAPS-4 | 540 |
| Rajasthan | Rawatbhata | RAPS-1* | 100 |
| | | RAPS-2 | 200 |
| | | RAPS-3 | 220 |
| | | RAPS-4 | 220 |
| | | RAPS-5 | 220 |
| | | RAPS-6 | 220 |
| Tamil Nadu | Kalpakkam | MAPS-1 | 220 |
| | | MAPS-2 | 220 |
| | Kudankulam | KKNPP-1 | 1000 |
| | | KKNPP-2** | 1000 |
| Uttar Pradesh | Narora | NAPS-1 | 220 |
| | | NAPS-2 | 220 |
| Gujarat | Kakrapar | KAPS-1# | 220 |
| | | KAPS-2# | 220 |
| Karnataka | Kaiga | KGS-1 | 220 |
| | | KGS-2 | 220 |
| | | KGS-3 | 220 |
| | | KGS-4 | 220 |

* Under extended shutdown for techno-economic assessment for continued operation.
** Expected to be in commercial operation by the end of this year.
# Presently the units are under long shutdown for Enmasse Coolant Channel Replacement (EMCCR) and Enmasse Feeder Replacement (EMFR).

**Targets for expansion of atomic energy**

1764. SHRI P. BHATTACHARYA: Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that targets for expansion of atomic energy have been set by Government;

(b) if so, the details of these targets and by when these are being decided to be achieved;

(c) whether the dependence of the country on the import of fuel would increase, to achieve the target; and

(d) if so, the percentage of supply of fuel to be met with imports?

THE MINISTER OF STATE IN THE DEPARTMENT OF ATOMIC ENERGY (DR. JITENDRA SINGH): (a) Yes, Sir.

(b) The present nuclear power capacity in the country is 5780 MW. The target set for the near term is 10080 MW which includes:

| Project | Capacity (MW) | Status |
|---|---|---|
| KKNPP–2, Kudankulam, Tamil Nadu | 1 X 1000 | Presently, generating infirm (non-commercial) power. Commercial operation expected by year end. |
| KAPP–3 and 4, Kakrapar, Gujarat | 2 X 700 | Under Construction, expected completion by 2019 |
| RAPP–7 and 8, Rawatbhata, Rajasthan | 2 X 700 | |
| Prototype Fast Breeder Reactor, Kalpakkam, Tamil Nadu | 1 x 500 | At an advanced stage of commissioning |

The mid-term target aims to reach a capacity of 13480 MW by the year 2024. This includes:

| Project | Capacity (MW) | Status |
|---|---|---|
| GHAVP-1 and 2, Gorakhpur, Haryana | 2 X 700 | Sanction accorded and work has commenced |
| KKNPP-3 and 4, Kudankulam, Tamil Nadu | 2 X 1000 | |

More projects based on both indigenous technologies and with foreign technical cooperation are planned in future to enhance the nuclear power capacity in the long term.

(c) The need for importing fuel for the operating Safeguarded reactors exists and increases depending upon the number of reactors placed under Safeguards. Presently, 12 Pressurised Heavy Water Reactor (PHWRs) of 220 MW capacity are under International Atomic Energy Agency (IAEA) Safeguards and operates with imported fuel. In case of placing more reactors under Safeguards in coming years, the fuel imports also increases accordingly. As such, the rate of fuel import depends on the number of reactors under Safeguards. On the other hand, the fuel requirement of Out-of-Safeguards reactors is met with indigenous fuel.

(d) The percentage of supply of fuel to be met with imports depends on factors like the number of reactors placed under Safeguards and their capacity, production of indigenous fuel etc.

**Measures to meet targets for nuclear power**

1765. SHRI M. P. VEERENDRA KUMAR: Will the PRIME MINISTER be pleased to state:

(a) the measures taken by Government to meet the target set for nuclear power generation by the year 2022; and

(b) the steps being taken by Government to improve research and development practices in nuclear energy?

THE MINISTER OF STATE IN THE DEPARTMENT OF ATOMIC ENERGY (DR. JITENDRA SINGH): (a) The Government has taken measures to ensure availability of fuel in required quantity (from both domestic and imported sources) and to expedite ongoing projects.

In addition, the Government has taken the following measures to facilitate nuclear power capacity addition:

- In principle approval of sites to locate nuclear power plants in future.
- Creation of India Nuclear Insurance Pool to cover the Operator's Liability as prescribed under the provisions of the Civil Liability for Nuclear Damage (CLND) Act, 2010.
- Amendment to the Atomic Energy Act, 1962 to facilitate establishment of Joint Venture Companies (JVC) by Nuclear Power Corporation of India Limited (NPCIL) with other Central Public Sector Undertakings to set up nuclear power plants.
- Budget speech announcement (2016-17) on augmenting investment in nuclear power.

(b) A focussed approach directed towards research and development with identified goals are being carried out in various fields like advanced reactor development, nuclear fuel cycle, thorium fuel utilisation, reactor safety studies, life cycle and ageing management studies, electronics and instrumentation, high efficiency energy conversion, advanced materials and remote handling and robotics.

The research and development activities in NPCIL are being carried out for development of technology, tools, testing facilities etc. aimed at enhancement of nuclear and radiation safety, reliable operation of nuclear power plants and development of equipment/components/systems for current and future nuclear power reactors.