



# Challenges Faced and Experiences gained in Commissioning of KKNPP Units 1 & 2

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NUCLEAR POWER CORPORATION OF INDIA LIMITED  
(A Government of India Enterprise)

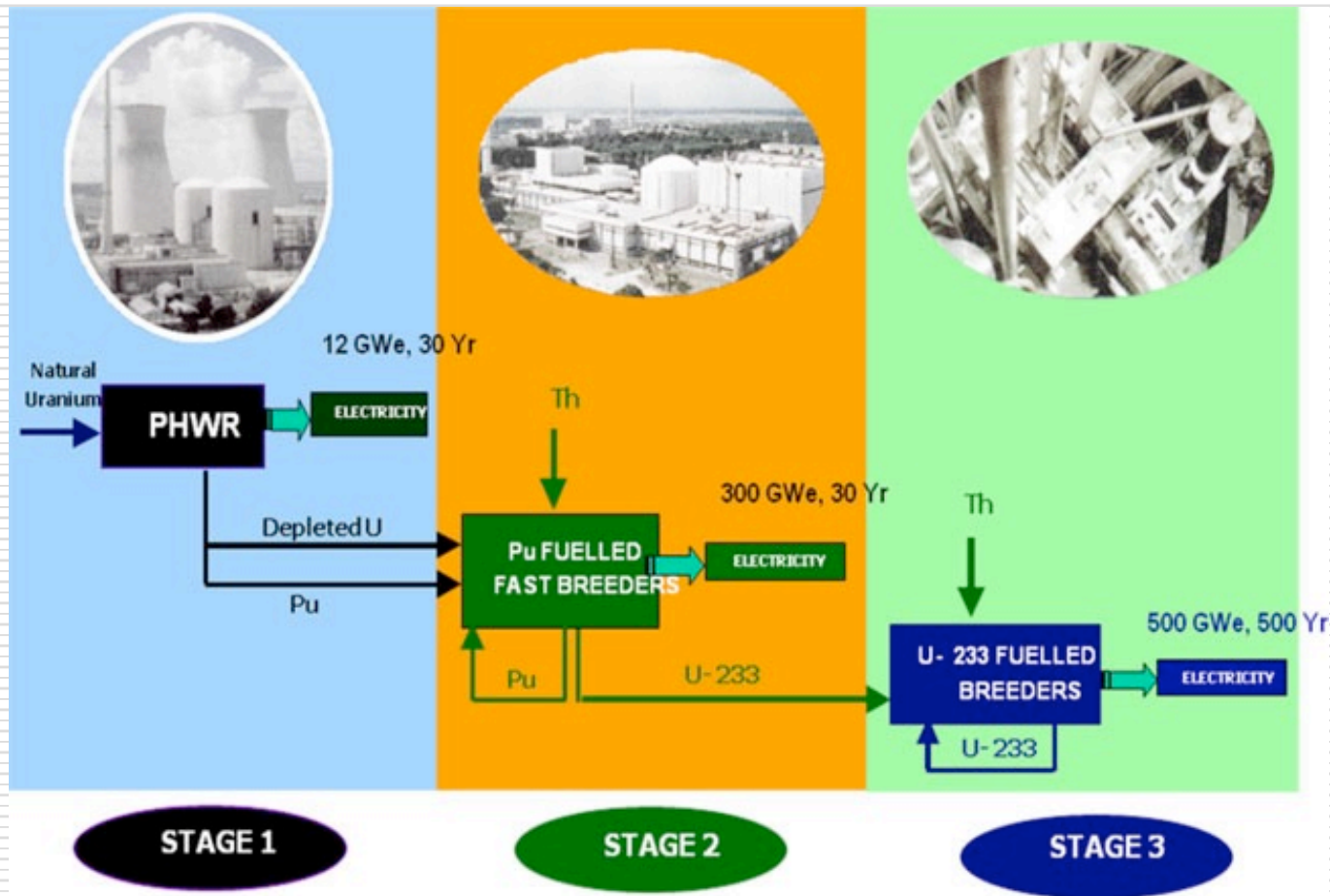
# Outline

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- ❖ India's Nuclear power program
- ❖ Commissioning Definition & phases
- ❖ Challenges faced
- ❖ Conclusion



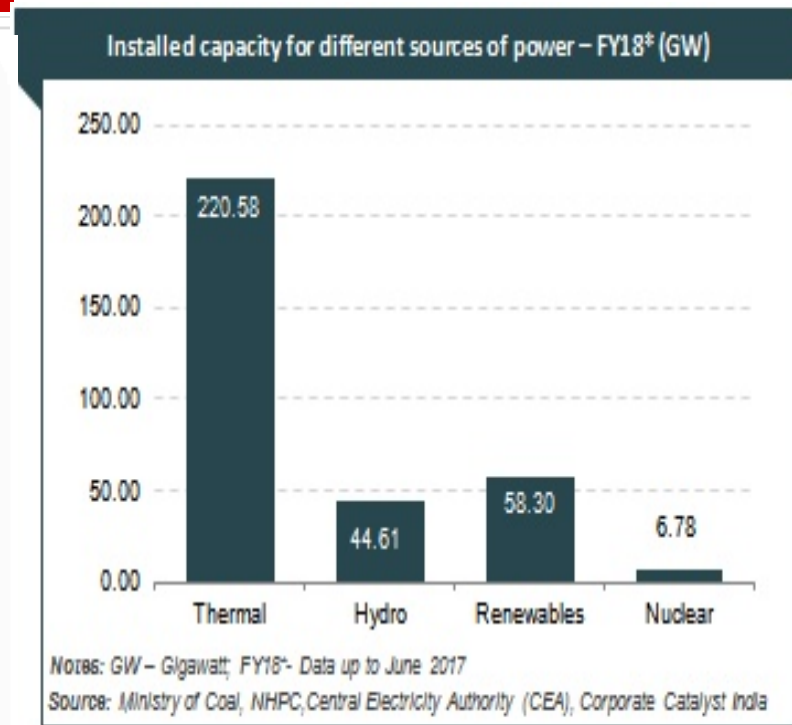
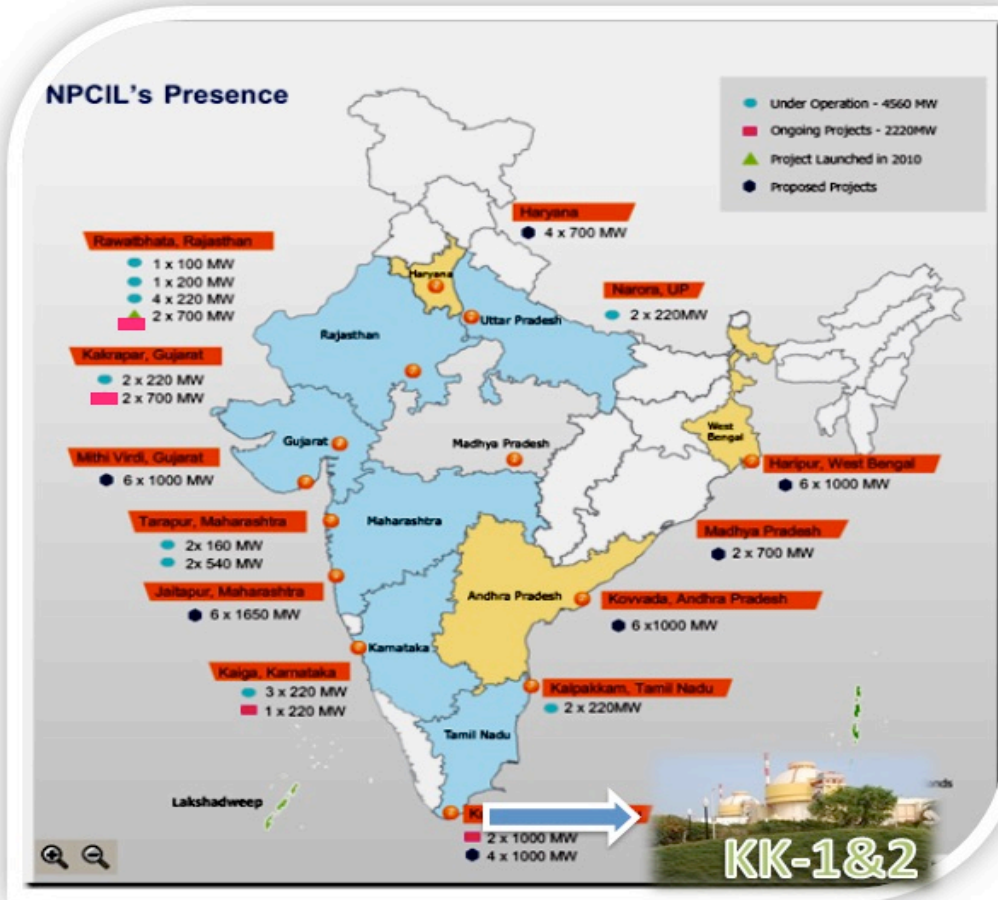
# Three Stage programme



In between three stage programme Imported LWRs envisaged as additionalities to fill the gap between growing Power Demand and Supply in INDIA



# Power Scenario & NPCIL presence



- GE BWRs at TARAPUR
- VVER-1000 Plants at KKNPP
- VVER-1200 Plants at new site
- AP 1000 Plants at Kovada
- EPR Plants at Jaitapur



# KKNPP- Introduction

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- ❑ Kudankulam is located on the coast of the Gulf of Mannar, at 25 Km to the north-east from Kanyakumari, in Tamil Nadu State
- ❑ KKNPP has been implemented with Technical Co-operation from Russian Federation within the framework of the Inter-Governmental Agreement
- ❑ KKNPP units 1&2 are the first land based PWR type of reactor in India
- ❑ 2x1000 MWe in operation  
4x1000 MWe under construction
- ❑ It has got many FOAK systems
- ❑ Unit #1 attained first criticality on July, 2013 and declared commercial on December 2014
- ❑ Unit - 2 attained first criticality on July, 2016 declared commercial on March 2017



# Commissioning

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- ❖ Commissioning is the process during which plant components and system, having been constructed are made operational and verified to be in accordance with the design and to have met the performance criteria
- ❖ Commissioning duration:
  - Phase A - Start up and adjustment, duration - 251 days (tentative)
  - Phase B - fuel loading, Initial criticality & low power test - 42 days (tentative)
  - Phase C - power startup and bringing power output to the design value, duration - 180 days (tentative)
  - Total around – 473 days





# Challenges during Commissioning

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During commissioning of KKNPP units 1&2, some corrections were performed. Detection of discrepancies is the main purpose of commissioning and further successful operation of the NPP.

- ❖ Some teething troubles related to
  - controller tuning,
  - water chemistry maintenance,
  - vibrations, component failures leading to minor transients including EPs on some occasions took place
  - the logics need to be changed to bring system performance as per design intent
- ❖ With the help of expertise available in India (Indian PHWR, BWR etc.) and RF specialists, prompt replacement of parts, supply of spares, overhauling and testing as necessary was carried out



# Conclusion

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- ❖ Despite many challenges the commissioning experience gained so far has been very enriching
- ❖ These Commissioning experiences of KK-1,2 will help us further during commissioning of KKNPP- 3 to 6
- ❖ NPCIL is looking forward to fruitful cooperation with ROSATOM.





# NPCIL: Working towards green Future

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Thank You



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