INDIA WATER WEEK-2016

Water Management - Learning from Ancient Wisdom and Traditional Practices

ANCIENT IRRIGATION SYSTEMS OF KARNATAKA (05-04-2016)

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VIKAYANAGARA EMPIRE

- Agriculture - A major occupation
- Period - From 1335 A.D. - 1565 A.D. (230 Years)
- Area - Spread from Bellary & Raichur districts to the whole of South India

IRRIGATION SYSTEMS

- River anicuts (Diversion weirs)
- Tanks
- Wells /lifts
ANICUTS-MAIN FEATURES

- Tungabhadra river- 18 anicuts
- Anicuts are built in parts abutting islands/boulders (Economy & safety of structures)
  - Raise the water level
- Contour canals from both sides/one side
- Site selection – Tap water at higher elevation
  - Use natural islands
  - Fix crest level at different levels
  - Economy in length (Bella anicut where half the length is constructed)

RIVER ANICUTS

Fig1: layout of anicuts along Tungabhadra river and the canal system
TURTU ANICUT LAYOUT

TUNGABHADRA RIVER

ANICUT

TURTU ANICUT

ANICUT WALL

ARRANGEMENTS OF GRANITE BLOCKS
RAMASAGARA ANICUT

TUNGABHADRA RIVER

ANICUT

RAMASAGARA CANAL

ANEGUNDI ANICUT

ANEGUNDI ANICUT

ANEGUNDI ANICUT

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ANEGUNDI ANICUT
ANEGUNDI ANICUT

AQUEDUCT
TANKS

• Necessity of tanks - River anicuts served limited area

• Tank construction methodology
  – Knowledge of site selection, contours, hydrology & hydraulics
  – Tanks in series-Optimum utilization
  – Embankment- Revetment on upstream
  – Sluice/Sluices (At different levels)
  – Waste weir
  – Canals
  – Tail off to a tank (ex. Kamalapur tank)

KAMALAPURA TANK

Upstream revetment

Sluice
WATER MANAGEMENT

• Maintenance works: Removal of silt and vegetation preventing leakages repairs of breaches/sluices/waste weirs watch and ward

• Best practices: Providing land grant
  Interest earned on maintenance
  Authorise local persons for tax collection
  Fishing rights to fishermen
  Use taxes collected for maintenance
  Form local committees for supervision
CONCLUSION

• The ancient wisdom in establishing irrigation systems in India, particularly in the Vijayanagara period from 1335 A.D. - 1565 A.D. i.e. for a period of 230 years is well chronicled by the researchers which reveals that the builders of river anicuts, tanks and wells had a thorough knowledge of the hydraulics of storage and water conductor systems.

• The efforts made by the rulers, planners and builders in taming nature, particularly the rivers, the ingenuity demonstrated in building a vast network of irrigation systems in the entire Vijayanagara empire to meet their agriculture and drinking water needs is noteworthy and commendable.

• The fact that many such systems are still in use speaks volumes about the care the rulers had taken in proper and continuous maintenance of the systems, their farsightedness to make them useful for centuries.

• An extensive network of river anicuts, tanks, wells and individual lifts built in the entire Vijayanagara empire and the lessons learnt by them will continue to inspire the generations to come.

THANK YOU