Climate Variability in Gujarat and the Role of Sardar Sarovar Project

Publication History
Received: 26 November 2016
Accepted: 31 December 2016
Published: January-March 2017

Citation
Joshi MB. Climate Variability in Gujarat and the Role of Sardar Sarovar Project. Climate Change, 2017, 3(9), 208-246
Climate Variability in Gujarat and the Role of Sardar Sarovar Project
Climate Change – A Reality and not Rhetoric

The mean temperature in India is projected to increase up to 1.7 °C in *kharif* (July to October) and up to 3.2 °C during *rabi* (November to March) season, while the mean rainfall is expected to increase by 10% by 2070 (IARI, 2012).
Climate Change – A Reality and not Rhetoric

Cherrapunji
– In August 2006

Flood in Desert?
The case of Rajasthan –
August 2006
Saudi Arabia, November 16, 2013
Dubai, 2016
Climate Change Projections by IARI

- The mean temperature in India is projected to increase up to
  - 1.7 °C in *kharif* (July to October) and
  - 3.2 °C during *rabi* (November to March) season

- The mean rainfall is expected to increase by 10% by 2070 (IARI, 2012).

Let us see the Projections made for the Districts covered under SSP Command Area (GSDMA Report on Climate Variability and Climate Change – Disaster Risk Scoping Study for Gujarat.)
## Estimated change in precipitation (mm) for 2070-2100

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Baseline: 1960-1990  A2 Scenario  B2 Scenario
Climate Change Experience in Gujarat

- Daily Weather Report of the IMD showed
  - Deviation in Maximum Temperature -2 to +2 °C,
  - Deviation in Minimum Temperature -2 to +4 °C.
- Normal date for onset of south-west monsoon is June 10 for south Gujarat, June 15 for Saurashtra, Middle and North Gujarat and July 1 for Kachchh.
- Consistently delayed by almost one fortnight to one month.
- Normal withdrawal date is 15th September, however in the current year, even after 1st October the rainfall continued
Navratri - Festive Mood spoiled by Rains
Regional Water Transfer

A means to address Water Scarcity
Sardar Sarovar Project – for Long Term Water Security
Mission of SSP

Harnessing the untapped waters of the Narmada for survival of millions of people and environmentally sound sustainable development of the western India by providing the essence of life—Water and Energy.
Narmada Water Use Plan

Water (28 MAF)

- Madhya Pradesh: 65.18% (18.25 MAF)
- Maharashtra: 0.89% (0.25 MAF)
- Gujarat: 32.14% (9.0 MAF)
- Rajasthan: 1.79% (0.50 MAF)

Gujarat (9 MAF)

- Irrigation: 7.94 MAF
- Domestic: 0.86 MAF
- Industrial: 0.2 MAF
Manmade Perennial Rivers

World’s largest canal network to convey 11.7 BCM of water every year
Narmada Canal Network

Irrigation Potential Developed
1.34 million Ha.
Conveying water over distances up to 700 km, and even by lifting 71 m for Saurashtra and 55 m for Kachchh.

11.7 BCM

92.28 BCM already conveyed so far
World’s Largest Lined Irrigation Canal
KBC Length 360 km

KBC offtake 385 km

GCA 35 lakh hectare

CCA 18 lakh hectare
• In-line Storage Capacity due to CVC
  • NMC – 220 MCM
  • SBC – 28.5 MCM
  • KBC – 39 MCM
The End of Thirst for Kutch
• Drinking water to 9490 villages and 173 urban centres

In addition to 159 towns, Number of villages already covered in the Narmada based Drinking Water Supply schemes

8188
Narmada water reaching the village even 700 km away
AGRO CLIMATIC ZONES IN SSP CANAL NETWORK
Extent of Coverage and Interfacing
Gujarat to see bumper mustard crop on record yield

Gujarat top cotton producing state, harvests 108 lakh bales

CCI officials said that these figures could go up further as figures from several areas are pending.

Bumper crop leaves Gujarat potato hub with storage woes

Potato farmers at Deesa in Gujarat are a worried lot. Despite a bumper crop, the lack of cold storage in the area has spoiled the euphoria over a bumper harvest.
The Largest Escape on River Sabarmati (450 cumecs)
Inter-Basin Transfer of Narmada Water

Narmada water released in enroute rivers,
Heran, Orsang, Karad, Dhadhar, Mahi,
Saidak, Mohar, Shedhi, Watrak, Meshwo,
Khari, Sabarmati, Rupen, Pushpawati,
Khari-II, Banas and Saraswati.

Benefits
Frenchwells and Tubewells rejuvenated
Recharging of natural aquifers
Water quality of these rivers got enriched in terms of pH, Dissolved Oxygen, Bio-chemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD) etc.
Harnessing the Potential of Small/Micro Hydel
“Looking out at the Canal Top Solar Power Plant, I saw more than glittering panels – I saw the future of India and the future of our world.”

UN Secretary General
**Integrated approach adopted for**

sustainable and efficient water resources development and management

**Includes**

<table>
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<tr>
<th>Water conservation</th>
<th>Inter-basin water transfer by interlinking</th>
<th>Strengthening of existing canal system</th>
<th>Participatory irrigation management</th>
<th>Micro irrigation</th>
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Augmentation of water resources

**Water Harvesting**
- Check-dams, Boribundh,
- farm ponds, Sim Talavdi,
- Van Talavadi, Terrace Talavadi
- Recharge wells
- Series of check-dams in a river basin

**GIS Atlas of irrigation structures**

**Shifting to basin wise integrated approach**
- Convergence with other departments
RIGHT STEP – ASTOUNDING EXPERIENCE

- Water conservation structures:
  - 1,68,694 Check-dams
  - 2,74,418 Farm Ponds
  - 1,25,541 Bori Bundhs

- Ponds:
  - About 26,619 deepened to enhance capacity

- Step-wells:
  - About 1000 revived, cleaned & put to use
One should take proper managerial action to use and conserve the water from mountains, wells, rivers and also rainwater for use in drinking, agriculture, industries etc.

Athurva Ved 19.2.1
Thank You

dr.mbjoshi@gmail.com