

Interlinking of Rivers in Maharashtra

***Pradnya B. Patil¹, Avishkar P. Kalbhor², Shravani M. Abnave³, Rutuja R. Chandane⁴,
Shreyas.V.Gangurde⁵, Prof. Sneha P.Mahalle⁶***

Department of Civil Engineering,

Jaywantrao Sawant Polytechnic Hadapsar, Pune

Corresponding authors' email id: snehal.mahalle88@gmail.com

Abstract

India is one of the few countries in the world endowed with reasonable land and water resources. Being a monsoon country the rainfall is erratic, unevenly distributed and hence water scarcity in some parts and floods in other parts frequently occur. In order to produce to feed the expected population of 1650 M in 2050, there is a need to bring about 150 M Ha under irrigation from 100 M Ha at present. As more than 65% of the flow in the rivers is not utilizable and goes to sea every year, it is necessary to interlink all the rivers in the North and South to provide water to the deficit basins. Government has created a National Water Development Agency (NWDA) to study and implement the programme.

At the backdrop of this, the Project is an attempt to study issues and challenges in interlinking of rivers in India from the point of view of society at large.

Keywords: *Interlinking, River Analysis, Elevation Profile, Inter basin water transfer*

INTRODUCTION

Water is undoubtedly the most important natural resource on the planet, as it sustains

all aspects of life in a way that no other resource can. United Nations agencies and the World Bank have claimed that these

scarcities will escalate in the future, creating serious problems for humankind and the environment. India needs to adopt a crystal-clear water mission that can help us to use available water resources to fields, villages, towns and industries round the year, without harming our environment.

Keeping in mind the increasing demand for water, the government of India has developed a new National Water Policy which claims that water is a prime natural resource, a basic need and a precious national asset. India's National Water Development Agency (NWDA) has suggested the interlinking of rivers of the country. This proposal is better known as the Inter-River Linking Project (IRL).

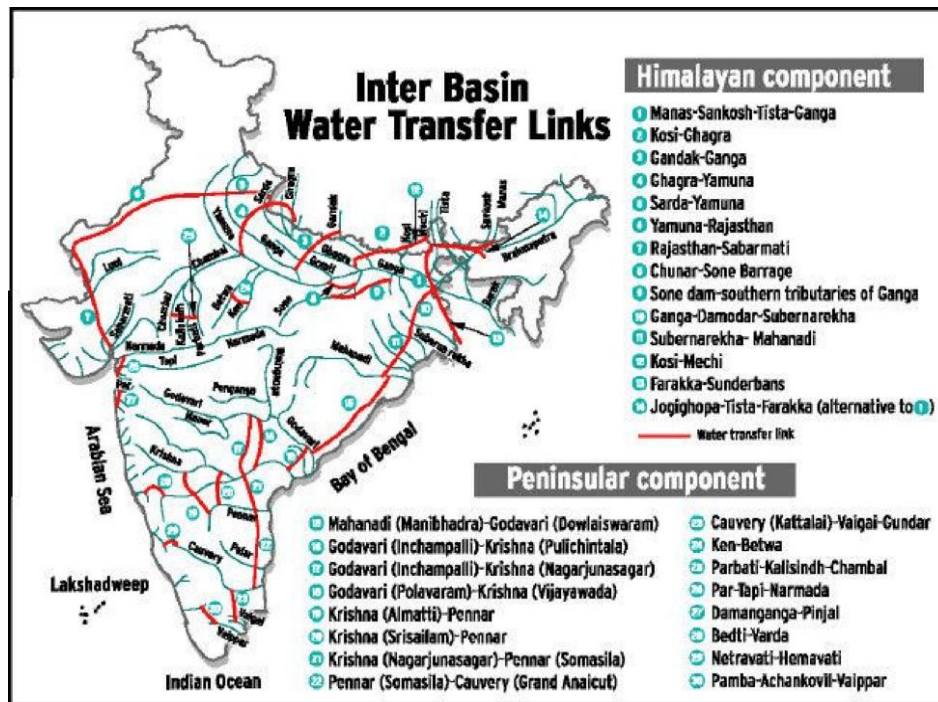
It is a mega project that engages money, resources, engineering, management and human understanding. It is designed to ease water shortages in western and southern India and aims to link 30 major rivers. although the various table text styles are provided. The formatter will need to create these components, incorporating the applicable criteria that follow.

Keeping in mind the increasing demand for water, the government of India has

developed a new National Water Policy which claims that water is a prime natural resource, a basic need and a precious national asset. India's National Water Development Agency

It is expected that properly planned water resource development and management could alleviate poverty, improve the quality of life, and reduce regional disparities, better law and order situation and manage the integrity of the natural environment. The core objectives of this project are to understand the historical background of Interlinking River Projects and to discuss issues and challenges pertaining to Interlinking River Projects and implement all those in the proposed project to make it successful.

Water is one of the principle elements which not only governs life on earth but also influences economic, industrial and agricultural growth of mankind. There is a general perception that with growing human population and rising standards of living, the available supplies of fresh water on the planet are becoming insufficient to meet the demand. India has a monsoon climate.



Source: National Water Development Agency

Except for a small coastal area in the South, almost the entire rainfall occurs during three to four monsoon months. Thus cultivation during non-monsoon months is irrigation dependent. A characteristic of the monsoon climate is variability of rainfall from year to year. India has an average of one in five below-normal rainfall years. India is basically an agricultural country, and all its resources depend on agricultural output. In India, 55% of agricultural output is from irrigated lands. Moreover, average farm incomes have increased from 80-100 % as a result of irrigation, while yields have doubled compared with those achieved under the former rain-fed conditions. Water will no longer be cheap and plentiful. It will

be scarce, expensive to develop and maintain and valuable in use.

WHY INTERLINKING OF RIVERS?

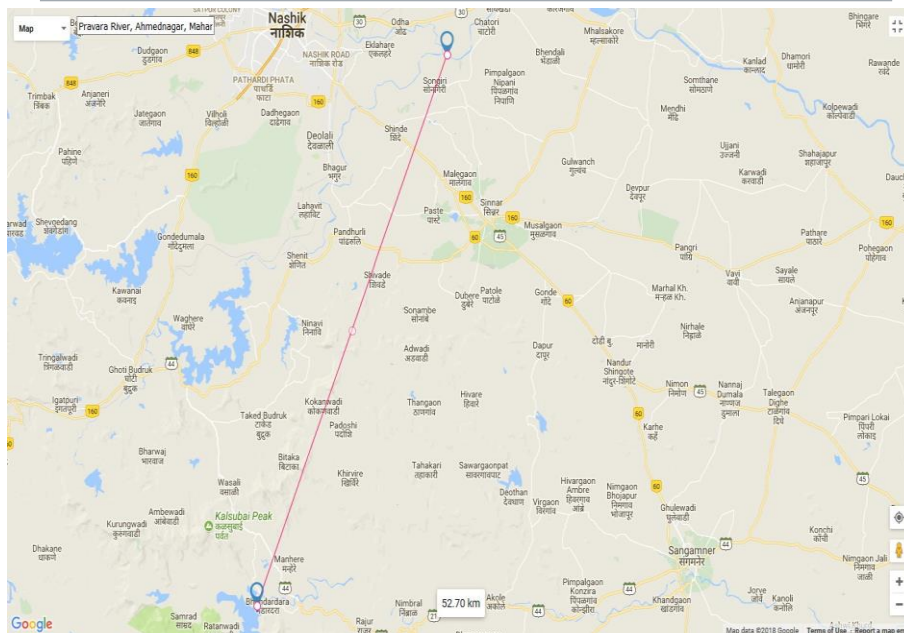
Drought, floods and shortage of drinking water:

India receives about 4,000 cubic kilometers of rain annually, or about 1 million gallons of fresh water per person every year. However, the precipitation pattern in India varies dramatically across distance and over calendar months. Much of the precipitation in India, about 85%, is received during summer months through monsoons in the Himalayan catchments of the Ganges-Brahmaputra-Meghna (GBM) basin. The northeastern region of the country receives

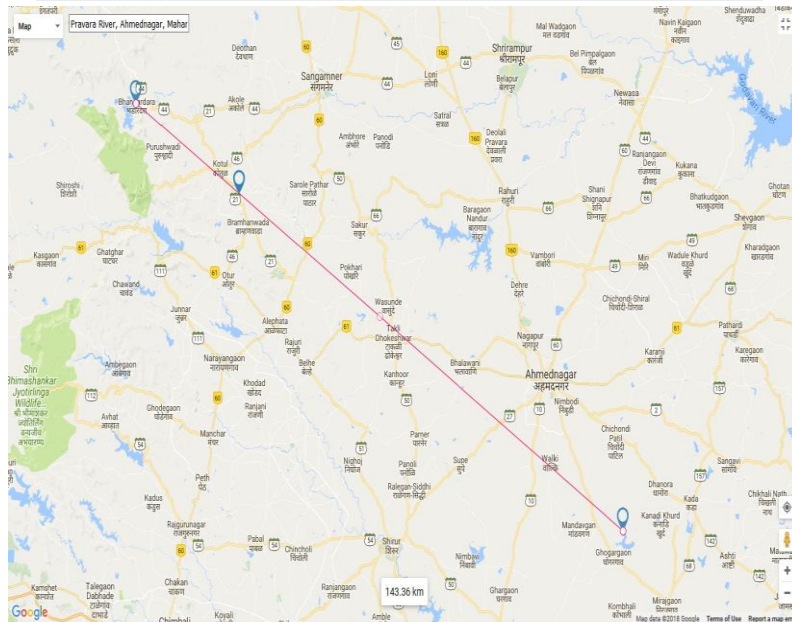
heavy precipitation, in comparison with the northwestern, western and southern parts. The uncertainty of start date of monsoons, sometimes marked by prolonged dry spells and fluctuations in seasonal and annual rainfall is a serious problem for the country. The nation sees cycles of drought years and flood years, with large parts of west and south experiencing more deficits and large variations, resulting in immense hardship particularly the poorest farmers and rural populations. Lack of irrigation water

regionally leads to crop failures and farmer suicides. Despite abundant rains during July– September, some regions in other seasons see shortages of drinking water. Some years, the problem temporarily becomes too much rainfall, and weeks of havoc from floods. This excess-scarcity regional disparity and flood-drought cycles have created the need for water resources management. Rivers inter-linking is one proposal to address that need.

**PROPOSED INTERLINKING PROJECT FOR MAHARASHTRA:
LINK OF GODAVARI TO BHANDARDARA DAM:**



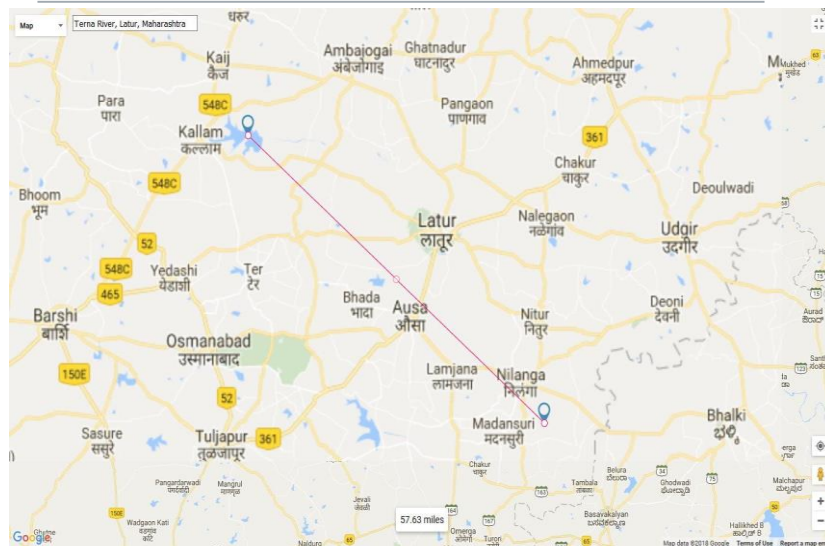
LINK OF BHANDARA DAM TO SINA ORIGIN



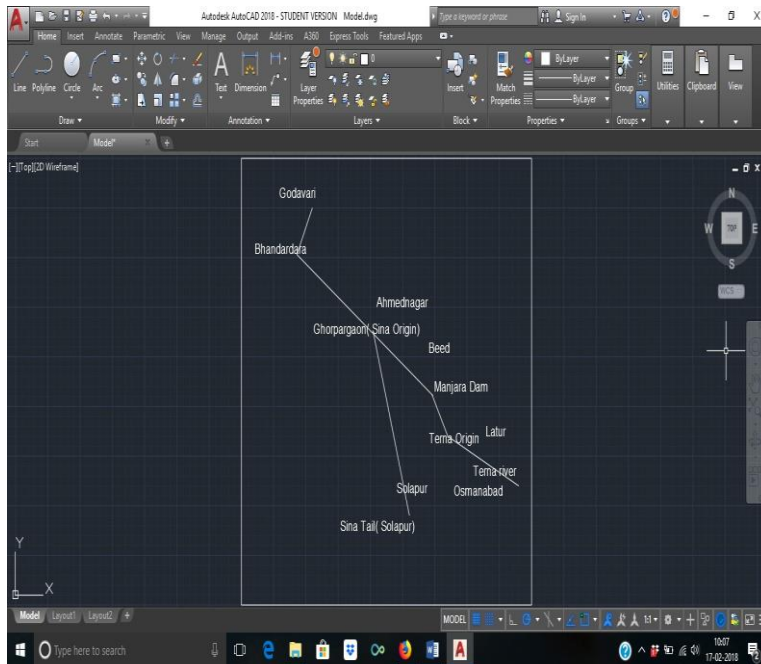
Water is diverted from Bhandardhara to sina Origin.

LINK MANJARA DAM TO TERNA RIVER ORIGIN (OSMANABAD)

Terna River is an important tributary of Manajara river in Osmanabad district which flows through AUSA and NILANGA talkulas in Latur.



MODEL: OVERVIEW OF THE PROJECT TO BE EXECUTED



The Proposed view of Interlinking to be executed.



Fig:4 The Model Of the Interlinking of rivers proposed

RESULT ANALYSIS

TOTAL DISTANCE COVERED BY THIS LINKING PROJECT: 399.8KMS

(Approx)

**TOTAL COST OF CONSTRUCTION
PROJECT:5349.842 Crores**

REQUIRED FOR THE

Diversion Used In River Linking

Starting point	End Point	Straight distance (KM)	Elevation
Bhandardara	Kotul	25.26	717.7 m or 2354.8 feet
Kotul	Pokhari	37.31	695.5 m or 2281.8 feet
Pokhari	Ghogargoan	82.08	596.2 m or 1955.9 feet

BHANDARDARA TO SINA ORIGIN

Distance: 143.36 KM

\$550 million by the loss of crops because of extreme draught or flood condition;

Advantages of Interlinking Of Rivers

- Create the potential to increase agricultural production by an additional 100 per cent over the next five years;
- Avoid the losses of the type that occurred in 2002 to the extent of
- Save \$ 565215000 a year in foreign exchange by avoiding importing oil;
- Unify the country by involving every Panchayat as a share holder and implement agency;

- Provide for enhancing the security of the country by an additional waterline of defense;
- water crisis situation by providing Provide employment to the 10 lakh people for the next 10 years;
- Eradicate the flooding problems which recur in the north-east and the north every year;
- Solve the alternative, perennial water resources;
- The large canals linking the rivers are also expected to facilitate inland navigation too;
- Increasing food production from about 200m tones a year to 500m

Disadvantages of Interlinking of Rivers

- 1) Environmental costs (deforestation, soil- erosion, etc.)
- 2) Rehabilitation: not an easy task
- 3) Social unrest/Psychological damage due to forced resettlement of local

people (for example, Sardar Sarovar Project)

- 4) Political effects: strained relationship with neighbors (Pakistan, Bangladesh)

CONCLUSION

The inter-basin transfer project is to be funded mainly by the government of India, international agencies and market borrowings The interlinking of rivers, therefore, will bring relief to utilize surplus water flow to water deficit regions in southern and western India, control twin problem of flood and drought, irrigate additional areas, help to produce additional food grain to cater to the needs of country’s ever growing population and generate electricity to an otherwise energy starved country. However, inter-linking of rivers alone may not solve all the water related problems of the country. some other ways to conserve water like rainwater harvesting, water reuse, watershed management and regulating the optimal exploitation of underground water resources need to be developed at a much faster rate and efficient way than what is existing today.

ACKNOWLEDGEMENT

Firstly I would like to express our gratitude to my guide Mrs.Sneha.P.Mahalle for the opportunity to work on this project under their guidance. They have provided an invaluable help with ideas and discussions throughout my entire time working on this project. It was an honor and a privilege to work with them. They also provided help in technical writing and presentation style and I found this guidance to be extremely valuable.

I thanks to all who have contributed directly or indirectly to this work.

REFERENCES

- I. NWDA, 1999, National Perspective for Water Resources Development, New Delhi.
- II. R.K. Sivanappan.” INTER-LINKING OF INDIAN RIVERS-NEED AND IMPORTANCE”, JOURNAL OF INDIAN WATER RESOURCES SOCIETY, Vol. 32, No. 3-4,July-Oct., 2012
- III. Sonali A. More. “Interlinking of Rivers”, International Journal on Arts, Management and Humanities 3(2): 14-20(2014)
- IV. Jalgaon.nic.in/html/RiverlinkingDocumentation/nadijodenglish.pdf.(ACCESSED ON 15/7/2015)
- V. Dharmendra MEHTA AND Naveen K. MEHTA , “ INTERLINKING OF RIVERS IN INDIA: ISSUES & CHALLENGES
- VI. Abu Raihan M. Khalid .The Interlinking of Rivers Project in India and International Water Law: An Overview ,<http://chinesejil.oxfordjournals.org/> .(ACCESSED on July 12, 2015)
- VII. https://en.wikipedia.org/wiki/Indian_Rivers_Inter-link.(ACCESSED on July 12, 2015)
- VIII. Anil Kumar Misra. “Proposed river-linking project of India: a boon or bane to nature.”, Environ Geol (2007) 51:1361–1376 DOI 10.1007/s00254-006-0434-7