

**NEW PROJECTS  
FOR  
IRRIGATION  
AND POWER  
1947**

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**CENTRAL BOARD OF IRRIGATION**

Popular Series

Leaflet No. 3

## FOREWORD

This leaflet introduces to the reader the names of projects which are, at present, under construction or under investigation in India, for the utilization of the Water Wealth of the Nation. Very brief descriptions are also given.

It will be appreciated that during the investigation of projects important changes sometime become necessary in the details. As such the information furnished herein is liable to alter but it will give the reader a general picture of what is being done in the country.

N. D. GULHATI,

*Secretary.*

KENNEDY HOUSE,

SIMLA,

7th January 1947.

# NEW PROJECTS FOR IRRIGATION AND POWER 1947

## THE NATURE OF NEW PROJECTS

- ✓ During the last few years all administrations in India have been planning schemes of development and there is no doubt, that projects relating to the development of irrigation and the generation of cheap hydro-electric power are going to play the most important part in raising the production per-capita and thus the standard of living of the millions of the country.
- ✓ The nature of irrigation projects that have been constructed in the past, whether canals, tanks or wells is familiar to all, but the nature of new projects is changing. Many of them are being designed on an extended and ambitious plan. As little water is left unused from the perennial flow in streams, more and more schemes are being based on storage of water available during the rainy season. Multi-purpose plans are being prepared to provide for irrigation, for hydroelectric power, for flood control, navigation, recreation facilities and fish culture.

+ Large irrigation works provide excellent sites for recreation facilities. The picture opposite of the Mettur Dam in Madras which provides a lake, thirtythree miles long and upto four and a half miles broad, reveals an excellent site where one could go for a week end. The Krishnarajasagar Dam in Mysore is actually visited by a large number of people every day. Many such dams are under contemplation and will be built during the years to come. These sites will provide new "Places of pilgrimage" and it is hoped that recreation facilities will be provided there for the benefit of the people.

For convenience, the following list of projects has been arranged according to administrations.

### ASSAM

So far no major irrigation scheme has been proposed in Assam. There is plenty of rainfall and at places drainage of surplus water is the more important problem. The main crop is rice. Six hundred minor schemes are however, under investigation which will irrigate about 300,000 acres.

### BARODA STATE

The Zankhari Project visualises a storage reservoir of 120,000 acre feet\* capacity by the construction of a masonry dam 3,500 feet long, across the combined Zankhari and Gira valleys. The project will irrigate an area of 9,000 acres and the falls on the canal will be utilised for generating 2,300 Kw. of electric energy. The scheme is expected to cost rupees one crore.

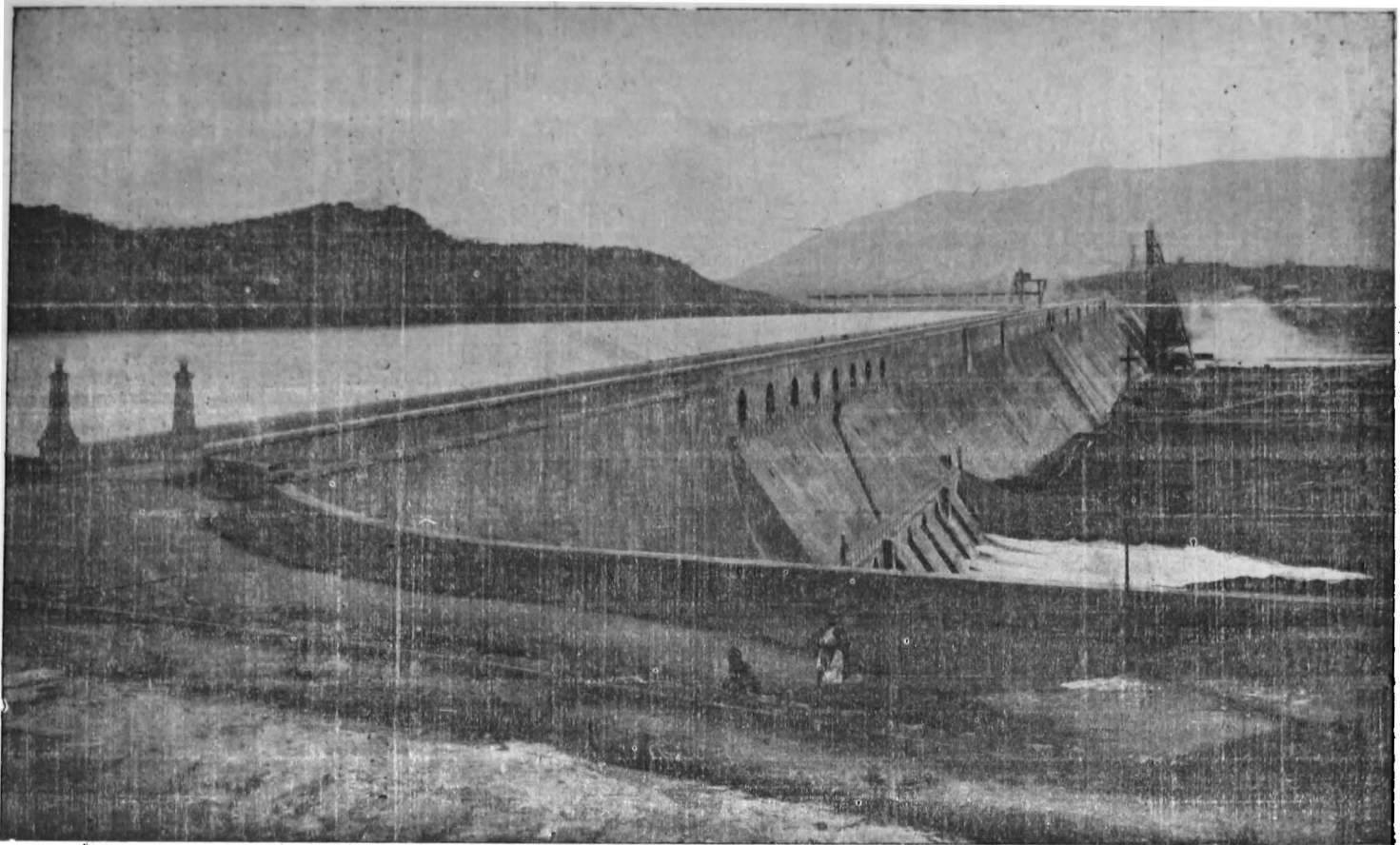
The Sabarmati Irrigation Project comprises a masonry dam across the Sabaramati, with a useful capacity of 230,000 acre feet. The supplies from the reservoir will be let down the river and picked up by a weir 25 miles below. The reservoir will provide irrigation to 45,000 acres, will generate about 6,000 Kw. and will cost about rupees two crores.

### BENGAL

The most important scheme under investigation in Bengal is the Damodar Valley Project which will provide perennial irrigation to three quarters of a million acres and generate 300,000 Kw. of power. The irrigation to be provided by this project is

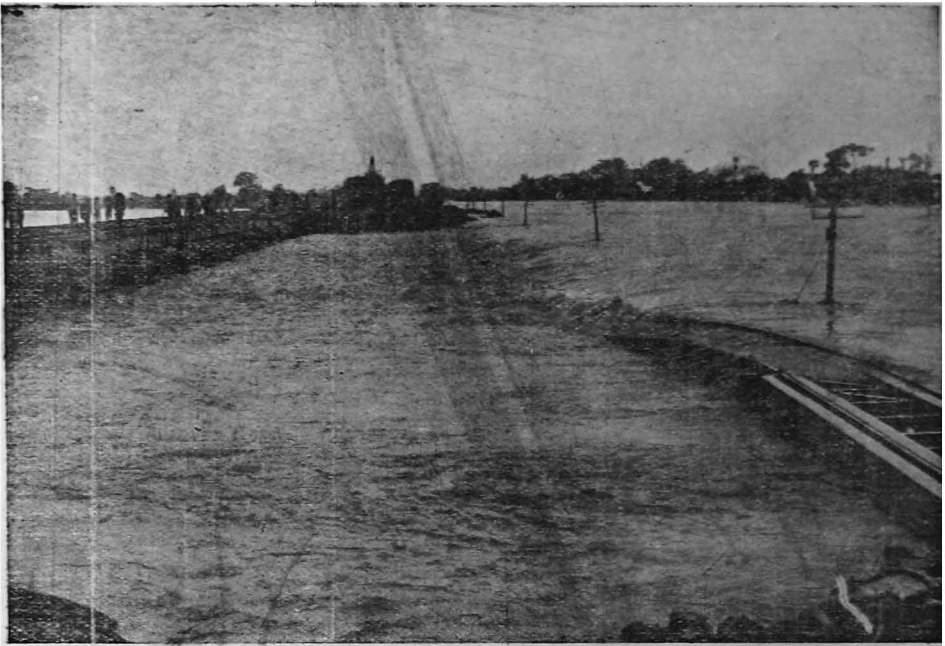
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\* One million acre feet is enough to supply 1,370 cusecs to a canal throughout the year.



The Stanley Dam across the Cauvery at Mettur in Madras.  
The reservoir formed by the dam is 60 square miles in extent.  
There will be many such "Places of pilgrimage" in India in the near future.

anticipated to give the cultivators an additional income of Rs. six crores every year. The project comprises a number of dams and one of the additional advantages will be the reduction in yearly flood damage from the Damodar. The project is expected to cost Rs. 55 crores. The details regarding administration of this project which effect both Bengal and Bihar are being formulated, and a Damodar Valley Corporation may be set up.



A view of the Damodar in spate.

Note the havoc caused

Work has already been started on the Mor Project which comprises the construction of a dam at Messenjore and a barrage with a canal, 3300 cusecs, on either bank of the river Moorakshy near the town of Suri, headquarters of the Birbhum District. The canals will command a total culturable area of nearly 600,000 acres. In addition, there will be a small hydroelectric generating station. The dam will impound waters which now run to waste; the reservoir will have a capacity of nearly one million acre feet. The scheme will cost over rupees seven crores. The new crops that will be grown will be worth Rs. 4-1/2 crores per year.

Another important scheme in Bengal is the Tista Project. This project comprises a dam across the Tista, just up stream of the Coronation Bridge. It will be about 700 feet high, and will impound 3.5 million acre feet of water. The power plant may have an installed capacity of over half million Kw. It is expected that a steady average supply of 15,000 cusecs will be available throughout the year for the canal. This discharge is equivalent to that of the river Thames in high flood, at London.

In addition there are many other minor schemes under construction and investigation.

## BIHAR

The most important scheme in Bihar is the Kosi Valley Project which is being prepared by the Central Waterways, Irrigation and Navigation Commission as a multi-purpose project for flood control, silt control, soil conservation, irrigation, drainage, reclamation of water logged areas, malaria control, navigation, power, fish culture and recreation facilities. The most important feature of the scheme will be a dam over 700' high to store about ten million acre feet of water and generate about one million Kw. of continuous power. To get an accurate idea of the quantity of power to be generated, it would be interesting to record that it will be twice the total hydro-electric power now installed throughout India. Considerable areas will be brought under irrigation, and Bihar would be spared the immense destruction of valuable land caused by the vagaries of the uncontrolled river Kosi.

In addition, as many as 80 minor irrigation and drainage schemes costing Rs. 1.7 crores have been projected chiefly in north Bihar.

## BOMBAY

The Girna Storage Project consists of a storage tank at Panjham on the river Girna, a tributary of the Tapti. It will have a capacity of nearly half million acre feet. Possibilities of power development are under investigation. The project may cost up to rupees four crores.

The Gangapur Storage Project will have a reservoir of 125,000 acre feet capacity, on the river Godavari, about eight miles north-west of Nasik, to supplement supplies to the existing Godavari Canals. The scheme will cost about Rs. eighty lacs and will bring under irrigation an additional area of about 40,000 acres.

The **Mula Storage Project** will comprise a reservoir at Chos, on the river Mula, with a capacity of about half million acre feet. This scheme is also estimated to cost Rs. four crores and will irrigate about 140,000 acres of land in the Ahmednagar district.

The **Vir Dam Project** will provide irrigation to 80,000 acres and is expected to cost nearly rupees two crores. It will have a dam 105 feet high at Vir across the Nira river in the Poona district. The reservoir will have a capacity of 200,000 acre feet and will supplement the scanty supply now run in the Nira Right Bank Canal.

The **Mahi Canal Project** comprises a reservoir on the Mahi river with a capacity of 160,000 acre feet, a pick up weir, half a mile long and 60 feet high at Wanora and a canal 68 miles long which will command 300,000 acres in the Khera district.

The **Tapti Canal Project** comprises a masonry pick up weir, 26 miles above Surat, and a canal to irrigate an area of 230,000 acres.

## CENTRAL PROVINCES

The Government of Central Provinces decided in 1923, on the recommendation of a committee, that no new state irrigation works should be undertaken.

Conditions have, however, changed and recently Government sanctioned the construction of three irrigation tanks in the Balaghat and Chhindwara districts designed to irrigate 20,000 acres of rice in 57 villages and the additional yield on account of these new tanks is estimated at 3,800 tons per year.

## COCHIN

The **Chalakydy River Diversion Work** contemplates the construction of a low masonry weir across the Chalakydy river, to irrigate an area of about 23,000 acres, at a cost of rupees 15 lacs.

The **Naduthodu Irrigation Project** comprises an earthen dam to store waters for the irrigation of 6,000 acres. This scheme will cost rupees 15 lacs.

The **Pillathodu Reservoir Scheme** will consist of an earthen dam provided with a concrete core-wall, across the stream of the same name, for storing 50,000 acre feet of water, for the cultivation of 3,500 acres of waste lands and for improving existing cultivation in 1,000 acres. The scheme is estimated to cost 12 lacs.



## GWALIOR

The only scheme which is under contemplation is the construction of a dam on the Sindh River, with a storage capacity of about one million acre feet. It is also anticipated that 16,000 Kw. will be generated at the dam site.

## HYDERABAD

Four schemes are at present under construction or about to be started. The most important of these is **The Tungabhadra Project**, which is being taken up jointly with Madras. From this, about 600,000 acres will be irrigated and about 139,000 Kw. of energy provided in Hyderabad State. The other three schemes are minor in nature and will irrigate about 28,000 acres in all.

Seven major schemes are under investigation, estimated to irrigate nearly three million acres and to generate over 500,000 Kw. In addition there are thirty two minor projects which will, among them, irrigate about 550,000 acres.

## JODHPUR

The **Jawai Irrigation and Hydro-Electric Project** comprises a reservoir with a capacity of 1.5 million acre feet on the River Jawai, one mile east of Eripura Road Railway Station. The project will command an area of about 110,000 acres. In addition, 4,500 Kw. of hydro-electric power will be generated at the reservoir and at the fall at the tail of the main canal.

## KASHMIR

A small irrigation project costing about twelve lacs, has recently been taken in hand for the irrigation of about 11,000 acres in the Anantnag district. This will give about 300,000 maunds of paddy crops annually. On the canal, which is 42 miles long, a hydro-electric station will be constructed to energise Anantnag and Bijbihara towns and to provide energy for lifting water from the river Jhelum for the irrigation of adjoining lands.

## MADRAS

The **Ramapadasagar Project** is, by far, the most important multi-purpose scheme projected in Madras. This reservoir on the Godavari will be one of the biggest in the world. A 150 feet high masonry dam, with 200 feet of foundations below the river

bed, a mile and a half long, will be built to store 12 million acre feet of water. The two canals which will take off from the dam on either side will irrigate an area of 600,000 acres in the dry tract above the Godavari delta and will also augment supplies to the existing delta canals, which will bring another one million acres under irrigation. The project will further develop 75,000 Kw. of continuous power at the dam site. The cost of the scheme as at present estimated is Rs. 60 crores.

The **Tungabhadra Project**, the construction of which is being taken up jointly by Madras and Hyderabad, has as its main feature a concrete masonry dam 8,200 feet long, and 160 feet high across the Tungabhadra, a major tributary of the Kistna. The dam will impound 2.6 million acre feet of water which will be drawn in equal quantity by Madras and Hyderabad. The total area to be irrigated in Madras will be 300,000 acres of which 36,000 will be under wet garden crop. In addition Madras will also generate a small quantity of hydro-electric power. The cost of the project to Madras will be Rs. 10 crores.

It is proposed to build a **Reservoir at Gondikota** across the Pennar, to irrigate 100,000 acres of dry crop on both sides of the river. The scheme will cost Rs. 30 crores. Possibilities of developing hydro-electric power are under examination.

The **Lower Bhawani Project** comprises a reservoir on the river Bhawani, a tributary of the Cauvery, and will irrigate an area of 200,000 acres. The project will cost Rs. 4 crores.

Various schemes for drainage in the Cauvery, Godavari, and Kistna deltas are under investigation.

## MYSORE

The post-war development includes 28 projects estimated to cost Rs. 1.75 crores. Two large projects awaiting sanction are the **Bhadra Scheme** with a storage capacity of 1.5 million acre feet to irrigate 180,000 acres and to generate 17,000 Kw. and the **Kabini Scheme**, with a storage capacity of 300,000 acre feet to irrigate 20,000 acres.

A large hydro-electric project is under construction at the **Jog Falls**, where it is planned to install machinery for generating 120,000 Kw., with a head of 1,205 feet.

## ORISSA

The **Mahanadi Valley Project** comprises the construction of three dams on the Mahanadi river with provision for power gene-

poses of irrigation. The first dam will be at Hirakund, 9 miles above Sambalpur and the others at Tikkerapara and Niraj. The project will extend perennial irrigation to over 2.5 million acres in Orissa and adjoining states and generate 200,000 Kw. of cheap power. The project will also provide navigation facilities and will protect Orissa from the twin spectres of drought and famine.

To utilise the regulated flow of the Machkund River at Duduma Falls for hydro-electric generation, a joint scheme of the Madras and Orissa Governments has recently been sanctioned. The scheme is expected to meet a peak load of 100,000 Kw. A dam at Jalaput, capable of storing about 600,000 acre feet of water will be constructed.

Minor schemes include small dams and weirs on streams and the improvement of existing irrigation tanks. Fiftyone such schemes estimated to cost rupees 70 lacs have been taken up.

## PUNJAB

The Bhakra Dam Project comprises a dam, 480 feet high, across a gorge in the river Sutlej at Bhakra; the reservoir so formed will have a useful capacity of 3.5 million acre feet, sufficient to give a mean discharge of 6,600 cubic feet per second for a period of 270 days—the dry part of the year. The irrigation system will consist of 200 miles of lined canals and a network of distributaries and will command an area of about 4.5 million acres. The scheme which is expected to cost Rs. 42 crores will also generate 160,000 Kw.

The Nangal Power Projects comprises a weir across the Sutlej at Nangal, 42 miles above Rupar, and a lined canal of 10,000 cusecs. Situated at intervals along this canal, there will be four power houses operated by falls ranging from 50 to 80 feet. The combined capacity of these power houses will be 79,000 Kw.; it will be increased to 138,000 Kw. when Bhakra starts to function. The initial stage of the project including transmission and distribution is estimated to cost Rs. 17 crores. Work on the project has already been taken in hand.

The Thal Canal is being opened on the 7th January, 1947. It takes off the River Indus at Kalabagh and 600,000 acres will be placed under irrigation immediately. The second stage of the project has also been sanctioned and it will extend irrigation to 150,000 acres. The final stage, which will complete the project will cover a further area of 1,200,000 acres.

The foundation stone of the Rasul Hydel and Tubewell Project was recently laid at Rasul, where hydro-electric power is to be generated by dropping water from the Upper to the



**Experiments in progress to evolve the best design for the destruction of energy of waters that will fall over the Bhakra Dam**

**The picture on the left shows "The Shooting Bucket" and that on the right "The Deep Bucket". The model represents a discharge of 115,000 cusecs on the original**

Lower Jhelum canal. The energy so obtained is to be utilised for the operation of tubewells to be installed in certain water-logged areas. It is expected that 2,000 cubic feet per second will be pumped from tubewells and it is hoped that this would lower the water table considerably.

The Mianwali Hydel and Pumping Project will utilise the fall in the tail escape of the Thal canal to develop 6,600 Kw. of which 3,800 will be used for pumping water for the irrigation of 140,000 acres of land on both sides of the Thal canal. The remainder will be available for industrial and domestic purposes. The project will cost just over Rs. one crore.

### RAJPUTANA STATES

The Chambul Hydroelectric Scheme has been designed to serve a large number of Indian States, Gwalior, Indore, Jaipur, Kotah, Mewar, Bharatpur, Bundi, Jhalawar, Jaora, Sitamai and Tonk. It has been prepared for the generation of hydro-electric power. The installed capacity will be 150,000 Kw. A dam 335 feet high will be constructed in the river Chambul and it will have a storage capacity of 5 million acre feet. The scheme is expected to cost rupees 11 crores.

### SIND

Two barrages are proposed to be constructed across the river Indus, one at Hajipur, 18 miles below Kotri and the other at Gudu. Canals at the Hajipur barrage will have a capacity of 30,000 cubic feet per second and will irrigate 2,600,000 acres in south Sind. The scheme is expected to cost Rs. 15 crores.

The second barrage will irrigate about 2,300,000 acres, north of the area served by the Lloyd Barrage, and will also cost Rs. 15 crores.

The Rohri canal hydroelectric project has been undertaken to produce 8,400 Kw. of hydroelectric power at a cost of about Rs. 1.35 crores. The main purpose of the project is however, to lower the water level of the Rohri Canal to prevent water-logging. The fall, so created, is being utilised for hydroelectric generation.

### UNITED PROVINCES

The Sarda Hydro-electric Project has lately been sanctioned and construction is in full swing. It is expected that the work will be completed by 1948 at a cost of Rs. 5.75 crores. The falls

in the head reach of the Sarda canal are being utilized for generating 41,000 Kw. for Nainital, Pilibhit, Kheri and Shahjahanpur districts of the U. P. and for the Rampur State. A part of the energy will be utilized for tubewell pumping.

**The Nayar Dam Scheme** will involve the construction of a 600 feet high dam to store 1.4 million acre feet of water on the river Nayar, a tributary of the Ganges. The supplies will be utilised for supplementing the existing discharge of the Ganges canal and for generating 100,000 Kw. Preliminary investigations are nearly completed and construction is likely to start soon. The scheme will cost Rs. 15 crores.

**The Rihand Hydel Project** to impound 9 million acre feet of water will comprise a dam 250 feet high on the Rihand, a tributary of the Sone. This will release a perennial flow of 6,000 cubic feet per second, to be utilized for irrigation in Bihar and will generate 150,000 Kw. It is expected to cost Rs. 6 crores and will take 4 years to complete.

**The Ramaganga Dam Project** will impound 2.2 million acre feet in the Ramaganga valley, by a dam 340 feet high across a gorge in the river. The scheme will generate 50,000 Kw. and is expected to cost Rs. 14 crores.

**The Lalitpur Reservoir** will impound 80,000 acre feet by a dam in the Shazad Nadi, near Lalitpur in the Jhansi district for extension of irrigation on the Betwa canal system. The scheme will cost Rs. 27 lakhs and extend irrigation to 26,000 acres.

**The Nagwa Dam** provides for the construction of a dam on the Karamnasa, about 3 miles above Silhet, and will cost about Rs. 33 lacs.

## CONCLUSION

In addition to the principal works that are under construction or under investigation and which have been listed in the preceding paragraphs, there are a large number of small works, the details of which may not interest the reader.

It is however, useful to remember that the projects that are now under construction or investigation, will, when completed, add 25 million acres of irrigation to India's existing 70 millions and will add about 4 million Kw. of hydroelectric energy to the existing paltry half million.

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