Ambedkar's Contribution to Water Resources Development

A Research Project by Central Water Commission

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Ministry of Water Resources,
River Development and Ganga Rejuvenation,
CENTRAL WATER COMMISSION
NEW DELHI

Central Water Commission

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Ambedkar's Contribution to Water Resources Development

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Message

It is a divine opportunity for me to write a few lines on Dr B.R. Ambedkar on his 125th Birth Anniversary, a tribute to a great social reformer, a distinguished economist, a learned professor, a brilliant lawyer, reputed author and a great political leader, but above all an outstanding water resources visionary as he left imprint in the water resources sector which very few of us know about his contribution to this sector as the nation recognises him as the father of constitution.

My Ministry is especially indebted to this great man of India and personally I have no hesitation to write that Dr Ambedkar is also father of water resources sector due to his invaluable contribution in evolving and framing various policies for this sector during pre and post-independence period since 1942 onward. I personally salute this great man for being the founding father of one of my present prestigious institution i.e. Central Water Commission in the form of Central Waterways, Irrigation and Navigation Commission (CWINC), while being Labour Member of the Viceroy's Executive Council in year 1945.

In May 1945, Dr Ambedkar said prophetically about CWINC "*I visualise that the growth of this body in course of time, into a very big organisation with its activities spread over the entire length and breadth of India, and its assistance and advise eagerly sought by all provinces and states, to the end that the natural resources of any region may be exploited for maximum benefit and unified development.*" This unambiguous vision on this organisation gives a glimpse of his

foresightedness for the future of water resources sector in India.

Dr Ambedkar evolved a new water and power policy during 1942-46 to utilise the water resources of the country to the best advantage of everybody and the Tennessee Valley Scheme of USA was an ideal model to emulate. He rightly visualised that only multipurpose project can be a fine prospect of the control of the river, a prospect of controlling floods of securing a fine area for perennial irrigation with resultant insurance against famine, much needed supply of power and uplifting the living standard of poverty stricken people of India.

Dr Ambedkar was instrumental in evolving multipurpose approach for water resources development on the basis of river valley basin, and introduction of the concept of river valley authority which are summarily now a days termed as Integrated Water Resources Management. Multipurpose use of water resources for the regional development of the entire river valley basin was the key element of his new water policy. Dr Ambedkar also emphasised on a need for proper rehabilitation and resettlement plan for the project affected regions. While summing up these points, Dr Ambedkar reminded the provinces of their collective responsibility and urged upon them the need to put their shoulders together for the task. Dr Ambedkar clearly emphasised that this would be possible only if the provinces offered their fullest co-operation and agreed to override the provincial barriers which had held up their progress and prosperity for so long which can be an instrument for solving the inter-state water sharing issues even today also by riparian States.

The river valley projects which were under the active consideration of the Labour Department during 1944-46 were Damodar River Valley Projects, the Sone River Valley Projects, the Mahanadi (the Hirakud Project) and the Kosi and others on river Chambal and rivers of the Deccan. These projects were conceived essentially for multipurpose development with flood control, irrigation, navigation, domestic water supply, hydropower and other purposes. The Damodar River Valley Projects and Hirakud Multipurpose Project are standing monuments in the memory of this great visionary.

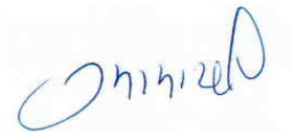
Dr Ambedkar was an expert in constitutional matters, which helped the Labour Department to evolve alternative ways within the framework of the provisions of the 1935 Act when he was made the Chairman of the Drafting Committee of the Indian Constitution, the country had the benefit of his knowledge and experience. This was especially useful in making provisions about issues related to inter-state water resources in the Indian Constitution. In this context we examine the role played by Dr Ambedkar in the light of his experience in evolving solutions agreeable to all concerned in the case of multipurpose projects.

Dr Ambedkar's this line of thinking, was also reflected in the framing of the new constitution for independent India. The new constitution for Country was benefited from the influence of Dr Ambedkar, who was the Chairman of its Drafting Committee, especially as regards independent India's water policy. The Inter-State Water Disputes Act, 1956 and the River Boards Act, 1956 are a well thought vision of Dr Ambedkar to deal with the matters of the inter-state rivers. The former provides, in the words of its preamble, "for the adjudication of disputes relating to the waters of inter-state rivers and river valley." The

River Boards Act provides for the regulation and development of Inter-State rivers valley, in terms of Entry 56.

It is almost impossible to pen down his invaluable contribution in development of water resources sector, and my Ministry will ever remain indebted to him. It is an iota of respect to pay the tribute on the occasion of 125th birth Anniversary of the legendary for his remarkable gift to India in the form of well thought provisions related to water policy in Indian Constitution and his unmatched thinking in shaping the water resources development of India. The second edition of this book will help administrators and policy makers to understand the background of Indian Water Policy in right perspective.

14th April, 2016



(UMA BHARTI)
Union Minister
Ministry of Water Resources,
River Development and Ganga Rejuvenation
Govt. of India

Message

It is a great honour for me to be a part of celebrations of 125th Birth Anniversary of Dr. B R Ambedkar. Dr. Ambedkar was a pioneer to draft new water policy and laid down the foundation for development of multipurpose projects for independent India. He had, in fact, been the guiding spirit behind Damodar Valley, Hirakud and many other projects in those days.

It had long been felt to make a detailed account of the achievements of Dr. Ambedkar in the water resources field by publishing a commemorative volume. Through well-known as drafter of the Constitution of India, Dr. Ambedkar had carried out vital amendments to the 1935 Act relating to water.

On the occasion of his 125th Birth Anniversary, my ministry undertook to bring out this reprint of commemorative centenary volume on Bharat Ratna Dr. B R Ambedkar to highlight his contribution in the field of water resources development in independent India.

I wish to convey my heartfelt thanks to the officers from my ministry in bringing out second edition of this centenary commemorative volume in the memory of the great visionary Bharat Ratna Dr. Ambedkar.

14th April, 2016

(Prof.SANWAR LAL JAT)
Union Minister of State
Ministry of Water Resources,
River Development and Ganga Rejuvenation
Govt. of India

Preface to the Second Edition

The second edition of centenary commemorative volume is brought out by the Central Water Commission as copy of this book is not available any more. The first edition was published in the year 1993. The content as well as title of the book is exactly the same except Appendix-F, which contains the Present Status of Water Resource Development and has been updated. As it is clear from the content of book, Dr Ambedkar had played a major role in shaping new water policy during pre and post-independence India including the establishment of the Central Water, Irrigation and Navigation Commission in the year 1945 which is present days Central water Commission at Centre. The Central Water Commission under the esteemed guidance of the Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India is celebrating 125th Birth Anniversary to commemorate his invaluable contribution in the water resource sector. The second edition of this book is a special tribute by his established organisation i.e. Central Water Commission to this great visionary Bharat Ratan Dr Ambedkar in his loving memory. I am sure this edition of book which contains the detail of development of new water policy Dr Ambedkar will be great help to scholars, students, administrators and policy makers dealing with water resource sector. I place on record my sincere thanks to the publisher for making special efforts to bring out second edition of this book.

(G. S. Jha)
Chairman
Central Water Commission,
New Delhi

14th April 2016

FOREWORD TO THE FIRST EDITION

Dr. B.R. Ambedkar (1891-1956) is well known as the main architect of India's Constitution and leader of the oppressed. However, what is less known is his contribution in the development of India's water resources.

Dr. Ambedkar was the man responsible for:

- the emergence of a definite all-India policy with regard to the development of water and electric power resources of India;
- the creation of the Central Waterways. Irrigation and Navigation Commission, now known as the Central Water Commission and the Central Technical Power Board, now known the Central Electricity Authority, as the administrative apparatus and technical bodies at the Centre to assist the States in the development of irrigation and electric power respectively;
- adoption of the concept of River Valley Authority or Corporation for the integrated development of the rivers in their region;
- introduction of the concept of multipurpose development of river valley basin for the first time in India;
- initiation of some important present-day river valley projects, particularly in Damodar, Sone and Mahanadi river basins; and
- amending 'entry 74' in the Constitution and bringing part of it to the 'Union list' and introducing article 262 regarding the adjudication of disputes relating to waters of inter-State rivers or river valleys.

Dr. Ambedkar was a pioneer in the field of developing multipurpose projects for independent India. He had, in fact, been the moving spirit behind the Damodar Valley, Hirakud and other projects. On the occasion of his birth centenary, Central Water Commission undertook to bring

out this commemorative volume on Bharat Ratna Dr. B.R. Ambedkar to highlight his contribution, in the vital field of water resources development in independent India.

In view of the complexity of historical records to be traced and dug out, the responsibility for the Commemorative Volume was entrusted to a Committee. The Committee had the benefit of research assistance from the Jawaharlal Nehru University, New Delhi in bringing out the contribution of Dr. Ambedkar.

This volume has been made possible only due to the commendable efforts of the Committee and Dr. Sukhadeo K. Thorat of Jawaharlal Nehru University, New Delhi.

M.S. Reddy
Chairman
Central Water Commission

New Delhi
31st March, 1993

ACKNOWLEDGEMENT
TO THE FIRST EDITION

It had long been felt to make public a detailed account of the achievement of Bharat Ratna Dr. B.R. Ambedkar in the water related field by publishing a commemorative volume. Though well-known as drafter of the Constitution of India, Dr. Ambedkar had carried out vital amendments to the 1935 Act relating to water. However, the extent and details of works carried out by him in the field of water and power in the capacity of Labour member from 1942-46 have been little known.

Initially, the work of collecting material on the constitutional discussion and provision on 'Water' for the commemorative volume was taken by the Technical Documentation Directorate, Central Water Commission. Later, realising the importance of the work involved, the Central Water Commission in May 1991 constituted a Committee to guide the scheme for the publication of a commemorative volume on Dr. Ambedkar. Special efforts were made by the Committee to contact personally the officials of the People's Education Society (Bombay) founded by Dr. Ambedkar, as well as advertisements in leading newspapers of Hindi. English and Marathi were placed with a view to seeking information from the Society and the public in general on Dr. Ambedkar's water related activities. The Committee deliberated on the matter and the research component of the work was entrusted to Dr. Sukhadeo Thorat, Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi. The Committee had

regular interaction with Dr. Thorat and the research material by him was discussed and deliberated in a number of Committee meetings. The final draft manuscript was submitted and it was accepted by the Committee in their 7th Meeting.

On behalf of the Committee, I hereby record grateful thanks to Dr. Sukhadeo Thorat, of the Jawaharlal Nehru University, New Delhi and his associates for their untiring research efforts to dig out relevant and authentic material from various sources. I also wish to acknowledge with thanks the excellent co-operation and support given by the Members of the Committee who took exceptional pains in interacting with Dr. Thorat and finalising the draft manuscript. Special thanks are due to Justice R.R. Bhole, Chairman, People's Education Society (Bombay); Shri S.S. Rege, Librarian (retd., PES); Dr. S.M. Mandhavdhare, Head of Dept. of Geography, Milind College of Arts Aurangabad; Shri V.D. Gaekwad, Retd. Asstt. Secretary, PES; Shri R.A. Wavare, Asst. Secretary, PES; and Shri Vasant Moon, Officer on Special Duty, Govt of Maharashtra who proved to be of immense help in providing information because of their close association with Dr. Ambedkar's works.

A.B. Joshi
Chairman of Committee &
Member (RM)
Central Water Commission

New Delhi
31st March, 1993

PREFACE
TO THE FIRST EDITION

This study is a tribute to Dr. Bhimrao Ramaji Ambedkar (1891-1956) in recognition of his contribution to the development of water resource in India, which he made as a member of the Central Cabinet in charge of the Department of Irrigation and Electric Power during 1942-46. It attempts to achieve an understanding of the role of Dr. Ambedkar in the formulation of a policy and the planned development of irrigation and electric power resource in the country in the years immediately preceding independence.

This research project was assigned to me in November 1991 with a specific purpose and a time-frame. The book centres around the theme that post-independence India's water policy emerged during the years that Dr. Ambedkar held this portfolio in the years 1942-46. It was during these years that, for the first time, the Labour Department formulated a policy for planned development of irrigation and electric power resources in the country on a comprehensive all-India scale and against an all-India background as a part of its post-war plan of economic development. The planning on the part of Dr. Ambedkar and his team in the Labour Department led to some basic developments which laid the foundation of India's water policy. It resulted in the establishment of a high level technical organisation at the Centre, namely the Central Waterways, Irrigation, Navigation Commission (the present day Central Water Commission), introduction of the concept of regional and multipurpose development of water resource, and adoption of the concept of River Valley Authority or Corporation for the first time to manage the affairs of projects on inter-State rivers. Above all, it set in

motion two of India's big multipurpose river valley projects, namely the Damodar and Hirakud and also made a beginning on the projects on the rivers Sone and Kosi.

Notable steps were also taken for electric power policy and planning and policy. A high level technical organisation was set up at the Centre, namely the Central Technical Power Board (the Present day Central Electricity Authority), a regional grid system was adopted, electricity undertaking was made a State or quasi-State subject, and schemes were adopted, again for the first time, to train electrical engineers abroad in the administrative, commercial and technical aspects of electric power development. The policy also initiated efforts to establish a Power Supply Department and formulation of principles to govern the price policy of public and private electricity undertakings. On both fronts namely, irrigation and electric power, the achievements realised in the short time of four years (1942-46) were truly remarkable. Dr. Ambedkar thus laid the foundation of what Jawaharlal Nehru later described as "temples of modern India".

I am aware of the limitations of the presentation of the subject matter of the book. It is loaded with quotations, too long and too many, to some extent inevitably. The consideration which weighed in favour of such presentation was that the area which is examined has not been studied so far and as far as I know, there is not enough material published on this particular contribution of Dr. Ambedkar. Hence I thought it useful to give it in its original detail.

No claim is being made that everything Dr. Ambedkar contributed in water resource development is covered in this book. Nevertheless, the material presented here is proof enough of the role he played in the short span of time he held the portfolio.

Several experts also played their part-too many to mention. But I shall be failing in my duty if I do not mention the contributions made by H.C. Prior, Secretary Labour, D.L. Mazumdar Deputy Secretary, A.N. Khosla first Chairman of the CWINC, H.M. Mathews, first Chairman of CTPB, W.L. Voorduin, member CTPB (hydro -electric expert from the Tennessee Valley Authority, USA). Collectively, they hammered out the technical details of policy and planning.

During the course of the present work, many have helped me. I am thankful to all the members of the Committee constituted by the Central Water Commission who helped in many ways. The research work went through occasional ups and downs. During these times Mr. A.B. Joshi the chairman of the committee was flexible enough to accommodate the changes with great concern and ease. I am thankful to him for this cooperation. Mr. Suresh Chandra and Mr. J.C. Joshi, members of the committee extended cooperation in a number of ways. I am thankful to them, both for their comments on the first draft, for arranging access to the Record Room of the Ministry of Energy and for accommodating changes in the budget estimate of the project at short notice. Appendix F, "Present Status of Water Resource Development" was prepared by Mr. Suresh Chandra. My thanks are also due to Mr. K.P.Singh of CWC. In the course of this work I have benefited from discussions with Dr. Aditya Mukerjee, Centre for Historical Studies, and Prof. K.S. Siwaswami, Centre for the Study of Regional Development, both of Jawaharlal Nehru University, New Delhi and Bhagwan Das, New Delhi. I am grateful to them all. My thanks are also due to Dr. S.M. Mandhavdhare and Vasant Moon for their keen interest and help in the project. Prof. Eleanor Zelliot of Carleton College, Northfield (Minn.) USA went through chapter I and suggested a need to

include a section on "Resettlement Policy". I am grateful to her for her comments and suggestions.

My thanks are also due to the Ministry of Water Resources. National Archives, and Nehru Memorial Museum Library. Teen Murti Bhavan, New Delhi for making available old records for reference. Dr. Narayan Singh Rao and Ms. Suneetha assisted in the research work most of the time. I am thankful to them. My thanks are also due to Mr. Arthur Monteiro for making improvements in the presentation of the book through careful editing. I alone, however, am responsible for the facts and interpretation in my writing.

I join the Central Water Commission in paying my sincere tribute to Dr. B.R. Ambedkar in recognition of his contribution in this area of national reconstruction.

Sukhadeo Thorat
Centre for the Study of
Regional Development
School of Social Sciences
Jawaharlal Nehru University

New Delhi 110 067
March 14, 1993

THE COMMITTEE

Constituted by the Central Water Commission (CWC) on 27th May 1991 to guide the scheme for publication of a commemorative volume on Dr. BR Ambedkar, highlighting his role in the development of India's water resources.
(CWC O.M. No. 7/1/91-Coord, dated 27th May 1991)

1.	Shri A.B. Joshi Member (River Management) CWC	Chairman
2.	Sri B.K. Aggarwal, Director, Central Electric Authority	Member
3.	Sri B.K. Bannerjee Manger, Damodar Valley Corporation	Member
4.	Sri RA Wavare, Assistant Secretary People's Education Society (Bombay)	Member
5.	Sri Suresh Chandra, Director, CWC	Member
6.	Sri J.C. Joshi, Director CWC	Member
7.	Sri J.P. Kardam, Deputy Director, CEA	Coopted Member

Terms of Reference

a. To collect material on the subject from various sources.

b. To prepare a manuscript of the report; and

c. To print the final report as a commemorative volume on Dr. Ambedkar.

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Appendices to Chapters

General Appendices

CHAPTER 1

THE MAN AND HIS CONTRIBUTIONS

National Reconstruction

The first quarter of the present century brought forth an impressive crop of eminent personages who contributed tremendously to the making of modern India. Dr. Bhimrao Ramji Ambedkar (1891-1956) among them, merits a special place. By sheer dint of industry and perseverance, he rose to the eminence of a great scholar, statesman, the main architect of the nation's Constitution and above all, the leader of the oppressed. In many respects, he stood apart from his eminent contemporaries. He combined in himself the distinction of being a great scholar, social revolutionary and statesman, a combination that is rarely come across. An intellectual giant and a prolific writer, he had imbibed knowledge that was truly encyclopaedic. His erudition and experience covered such diverse fields as law, constitution, economics, sociology, politics, and comparative religion. His range of topics, width of vision, depth of analysis, rationality of outlook and essential humanity of argument marked him out as a man of destiny.

Ambedkar hardly ever wrote for literacy fame[1]. Rather, in his scholarly pursuits as in his political

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1 See Appendix 1.1 for a list of Ambedkar's wiriting. See, for complete writings in English of Dr. Ambedkar, *Dr. Babasaheb Ambedkar: Writings and Speeches,* Vasant Moon (ed.) Vol. I (1979), Vol. II (1982), Vol. III(1987), Vol. IV (1988), Vol. V (1989), Vol. VI (1989), Vol. VII(1990), Vol. VIII (1990), Vol. IX (1990), Vol. X (1991), Vol. XI (1992). Bombay: Education Department, Government of Maharashtra.

activities, he was driven by a desire to understand the vital issues of his times and to find solutions to the problems troubling the people. With this motivation, he helped decisively in shaping the social, economic and political development of the nation during a crucial period of its history. There was hardly any issue which arose between the early 1920s and the mid1950s to which Ambedkar did not apply his razor sharp analysis, whether it was the problem of minorities, reorganisation of states, partition, or the political and economic framework for an independent India.[2] He did not rest content with making scholarly expositions on these issues. He attended to the problems if they came within his authority; where they did not, he helped those in authority to find appropriate solutions.

Most memorable of Ambedkar's contributions, of course, was his intellectual contribution to the making of the Indian Constitution, his social and political efforts for the uplift of the socially deprived classes and his revival of Buddhism. Close to his heart was the cause of the downtrodden, to which he devoted much of his academic and political efforts since 1917.[3] It goes to his eternal credit that he was successful in placing this "invisible" segment of Hindu society on the social and political map of India. Ambedkar articulated their problems, brought about a deserved recognition of these problems, and

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2 See "States and Minorities" (1947), "Communal Deadlock and the Way to solve it" (1945), "Evidence before the Southborough Committee on Franchise" (1919), in *Dr. Babasaheb Ambedkar: Writings And Speeches,* op. cit., Vol. 1, 1979.

3 Among Ambedkar's writings on the problem of caste are: (a) "Castes in India: Their Genesis, Mechanism and Development" (1917), (b) "Annihilation of Castes" (1935), (c) "The Untouchables: Who are they and why they Become Untouchable" (1948), (d) "Who were the Shudras? How they Became the Fourth Varna in Indo-Aryan Society" (1946), in ibid., Vols. I, V and VII.

was successful in providing safe-guards in the Constitution and in the legal system of India against social and economic discrimination. With untiring zeal, he generated among the depressed classes an intense awakening about their rights. He left behind him a legacy of an apparatus of social, religious and political organisations, a network of educational institutions, a revived Buddhist religion, and an ideology supported by a prodigious literary output which forms an enduring base for the perennial awakening of the masses in India for years to come.[4]

In the area of Constitution making, Ambedkar was involved in all the deliberations, even preceding the Montagu-Chelmsford Reforms of 1919. Prior to these reforms, a Franchise Committee was appointed under the Chairmanship of Lord Southborough to deal with the issue of franchise. Ambedkar, who gave extensive evidence before this committee, argued forcefully for political representation for depressed classes on the basis of population. The committee recognized representation to the depressed classes by nomination, though to a lesser extent than Ambedkar had envisaged. Ambedkar also presented a printed memorandum to the Indian Statutory Commission under the Chairmanship of Sir John Simon in May 1928, which revised the Government of India Act of 1919. He also played a crucial role in the Round Table Conferences which were convened in London in the 1930s to frame a Constitution for India, and served on the Minority sub-committee, the Provincial sub-committee and the Service sub-committee. In a scheme of political safeguards for depressed classes in a self-governing India that he submitted to the Minority sub-committee, he argued for common citizenship, free use of rights, and adequate representation in legislation and

4 Eleanor Zelliot (1992), *From Untouchable to Dalit*, Delhi: Manohar, pp. 54-78.

government services to the depressed classes. The emergence of the depressed classes as a force to reckon with in the political map of India was mainly the achievement of Ambedkar's eloquence in the Round Table Conferences in the 1930s.[5]

When a Constitutent Assembly was to be constituted to frame the Constitution of India, Ambedkar submitted a memorandum to it, entitled "State and Minorities,"[6] probably the only person to have done so. The memorandum outlined his view on the form of the envisaged Constitution and it was much more than a charter of provisions for minorities in the country's constitution.

On account of his profound knowledge of constitutional matters, Ambedkar was appointed a member of the drafting committee of the Constituent Assembly and finally its Chairman, a trust that he vindicated in full measure. Working with incredible speed and energy, he almost single-handedly produced the draft within two years of the first meeting of the Constituent Assembly, and a little over a year later, the final Constitution. Recalling his contribution to this stupendous achievement, T.T. Krishnamachari, who was a member of the Drafting Committee, said in the Constituent Assembly on November 5, 1948:

> The House is perhaps aware that of the seven members nominated by you one resigned from the house and was replaced. One died and was not replaced. One was away in America and his place was not filled up and another person was engaged in state affairs and there was void to the extent. One or two people were far away from Delhi and perhaps reason of health did not permit them to attend. So it happened

5 See W.N. Kuber (1991), *Ambedkar: A Critical Study*, New Delhi: People's Publishing House.

6 Dr. B.R. Ambedkar (1947), *State and Minorities*, Bombay: Thacker & Co.

> ultimately that the burden of drafting the Constitution fell on Dr. Ambedkar and I have no hesitation in saying that we are grateful to him for having achieved this task in a manner which is undoubtedly commendable.[7]

Pylee writes:

> Ambedkar brought to bear on his task a vast area of qualities, erudition, scholarship, imagination, logic and eloquence and experience. Whenever he spoke in the house usually to reply to the criticisms advanced against provisions of Draft Constitution there emerged a clear and lucid exposition of provisions of the Constitution. As he sat down, the mist of doubts vanished as also the clouds of confusion and vagueness. Indeed, he was a modern Manu and deserves to be called the Father or the Chief Architect of the Constitution of India.[8]

In his concluding speech Dr. Rajendra Prasad, the President of the Constituent Assembly said:

> Sitting in the chair and watching the proceedings from day to day, I have realised as nobody else could have, with what zeal and devotion the members of the Drafting Committee and especially its Chairman Dr. Ambedkar, in spite of his indifferent health have worked. We would have never made a decision which was or could be ever so right as when we put him on the Drafting Committee and made him its Chairman. He has not only justified his selection but has added lustre to the work which he has done.

Among the more noteworthy of Ambedkar's contibutions are his views on the reorganisation of states, which posed considerable difficulty to the Constituent Assembly. He dealt with the issue in its

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7 Dananjay Keer (1954), *Dr. Ambedkar: Life and Mission*, Bombay: Popular Prakashan.

8 Kuber, op.cit.,147-8.

entirety in "Thoughts on Linguistic States", in which he stated his position.[9] His views were new and differed from those of the State Reorganisation Commission. According to him, "the one state, one language theory may be put up by any two ways: (1) one state, one language or (2) one language, many states." While in principle he agreed that language should form the base for the creation of states, since a linguistic province produces what democracy needs, namely social homogeneity, and makes democracy work better than it would in a mixed province, he favoured the second option of people speaking one language organised into many states, his preference being for small states.[10] He laid down five principles for the formation of the individual states: (a) efficient administration, (b) needs of the different areas, (c) Sentiments of different areas, (d) proportion between the majority and minority, and (e) the size of the state. Regarding religious minorities, an issue which was uppermost in the minds of many at that time, Ambedkar expressed his views in a book titled *Thoughts on Pakistan*, which was a provocative and helpful analysis of the basis of nationalism.[11]

Water Policy and Planning

No less important, but less well known among Ambedkar's contributions to the nation are his direct participation and role in the formulation of certain development policies and planning. At least on two occasions, Ambedkar was directly involved in policy making: once as Law Minister in the Central Cabinet of independent India during 1947-51 and, earlier, as

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9 See Ambedkar's "Thoughts on Linguistic States" (1955), "Maharashtra as a Linguistic Province" (1954), "Need for Check and Balance" (1953) in *Dr. Babasaheb Ambedkar: Writings and Speeches*, Vol. I, op. cit.

10 Kuber, op.cit. 234.

11 "Dr. B.R. Ambedkar: Thoughts on Pakistan" First Edition (1940), *Pakistan or the Partition of India*, Bombay: Thacker (1946), third edition.

a member of the Viceroy's Executive Council, in charge of the Labour, Irrigation and Power portfolio during 1942-46. Though he made a substantial contribution to the nation's development in this position, surprisingly, this aspect of his life has hardly been studied.[12]

An Independent Department of Labour had been created in November 1937, the Department of Industry, which was a part of a combined Department of Industry and Labour, going to the Commerce Department. Subjects like "irrigation", "electricity" and others related to public works were also transferred to the newly created Department of Labour. The policy formulation and planning for the development of "irrigation and electric power" including "hydro-electric power" thus became the major concern of the labour portfolio in July 1942.[13]

The early 1940s, when Ambedkar took charge of irrigation and electricity, were a crucial period for the evolution and adoption of the concept of economic planning at an all-India level. The post-war plan for the reconstruction and economic development for India was then taking shape. The Government took a very ambitious initiative to develop a framework within which positive alternative policies were centrally formulated. It was to be an action plan. The policy regarding water resources and electric power development was conceived, initiated and was given a definite shape as part of this programme.

The Labour Department began all-India planning for the development of irrigation, waterways and navigation virtually from scratch. Sporadic local

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12 Bhagwan Das (1979) "Introductory note on the River Valley Project", *Thus Spoke Ambedkar*, Vol 3, Bhagwan Das (ed.), In this short essay Bhagwan Das highlights the role of Dr Ambedkar in the development of river valley projects.

13 National Archieve of India (1987), *International Council on Archives, Guide to sources of Asian History*: India 3.1, New Delhi, 105-12.

enquiries and investigations in these matters had been made by the Centre from time to time, but planning efforts had been undertaken exclusively on a local basis. It was the first time that the Centre began to consider planning as a fundamental subject for water, power, mineral resource etc., on a comprehensive all-India scale and against an all-India background.[14] A Central Government policy with regard to water resources and hydro-electric power development was accordingly evolved and given a definite shape. Among the consequences of these efforts were:

(a) the emergence of a definite all-India policy with regard to the development of "water and electric power resources" of the country;

(b) the creation of an administrative apparatus and technical bodies at the Centre to assist the states in the development of irrigation and electric power resources such as the present-day Central Water Commission and Central Electricity Authority;

(c) the adoption of the concept of River Valley Authority or Corporation to overcome constitutional problems regarding the jurisdiction of Central-State Governments and to develop irrigation and hydro-electric power of interstate rivers;

(d) the introduction of the concept of regional and multipurpose development of river valley basin for the first time in India; and

(e) the initiation of some important present day river valley projects, major and minor, which include

14 File No. DW-1-25 CWINC/47, Labour Department, "Setting up of the Central Water, Irrigation and Navigation Commission on Permanent Basis", National Archive, New Delhi.

the Damodar River Valley, Sone River Valley, Orissa river Schemes including the Mahanadi, the Chambal River Scheme and the schemes for the river of the Deccan.

Dr. Ambedkar, being at the helm of affairs of the Labour Department was instrumental in initiating these steps. With his deep knowledge in the area of economics, politics and constitutional law, he helped the Central Government and his Department in the articulation of water and power policy and planning. What follows is an attempt to understand and highlight the role and contribution made by Ambedkar and his department during 1942-46 to this aspect of India's development. Their achievements were in terms of policy formulation, creation of an administrative apparatus and technical bodies at the Centre that provided an alternative solution to state-Central problems, and setting in motion several present-day major and medium river valley projects.

CHAPTER II

POST-WAR ECONOMIC PLAN AND WATER POLICY

Post-War Economic Plan

World War II left in its wake destruction and instability of indescribable proportions, which the post-war world needed to repair. In many countries, which had seen battle, the problem of reconstruction was mainly of replacement of war-devastated physical infrastructure and industrial plants. In India, the needs were more long-term oriented than of immediate repair. The immediate concern of the Central Government was rehabilitation and resettlement of defence personnel and workers employed in war related industries, and conversion of industry from war to peace. The situation here was significantly different from that of the European and other Asian Countries. The objective and scope of the Indian plan of economic reconstruction therefore had to be different. It was argued that in its long-term perspective, restructuring in India should necessarily include the building of new physical infrastructure and industries, as distinguished from rehabilitation of industries destroyed in the war that Europe had to attend to. In so far as the Indian plan provided measures for rehabilitation of defence service personnel, labour displaced from war industry, and the steps for conversion of industry from war to peace, it was a reconstruction plan. But in its long term objective, as we shall see later, it was a plan for economic development of India.

The seriousness with which the Government's plan for the economic restructuring of India was

conceived, initiated and published, evoked lively interest and positive reaction from various political parties and groups.[1] Alternative plans were prepared and submitted to the Central Government. These included "the Bombay Plan" by J.R.D. Tata and others,[2] the "People's Plan" and "the Congress Plan" prepared by the National Planning Committee with which Jawaharlal Nehru and eminent scientists such as Meghnad Saha were associated.[3] The alternative plans were put forward as statements of objectives and strategies to be kept in mind in developing a perspective on economic planning in India, and the general lines on which planning should proceed. While differing in their objectives and strategies, all the alternative plans uniformly assumed that a national government was in store for the Indian nation. The underlying assumption was that on the termination of the war or shortly thereafter, a national government would come into existence at the Centre which would be vested with full freedom in economic matters.[4]

The Government plans were conceived with continuity in view for at least fifteen to twenty five years. This was facilitated by the fact that several eminent Indian economists like V.K.R.V. Rao, D.R. Gadgil, C. N. Vakil and P.S. Lokanathan were associated with the formulation of post war reconstruction plan, who also became closely associated with economic planning during the 1950s

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1 Minutes of the 11th Meeting, September 11, 1944 "Reconstruction Committee of the Council", File No.1(4), p/1945, Finance Department, Planning Branch.

2 Sir Purshotamdas Thakurdas, J.R.D. Tata and others (January 1944), *A Plan of Economic Development for India*, second edition, "People Plan" by B.N. Banerjee, G.D. Parikh and V.M. Tarkunde, March 1946.

3 Sukhamoy Chakravarty(1987), *Development Planning: The Indian Experience*, Oxford, p.9.

4 *A Plan of Economic Development for India,* op cit., 2.

and 1960s.[5] As we shall see later, the policy measures and plans undertaken during 1942-46 under the Reconstruction and Economic Development Plan laid down the very base of the water and power policy of post-independence India.

To make the Reconstruction and Economic Development Plan comprehensive and well balanced, the Government had set up five committees to formulate policy and action plans (see Table II.1).[6] At the apex was the Reconstruction Committee of the Council, popularly known as the RCC, to decide the general plan objectives and thrust. Its members comprised all members of the Central Cabinet, with the Viceroy as the Chairman. Each Committee had a "Policy Committee" headed by the Council member concerned and was composed of representatives of the Central, Provincial and State Governments and some representatives of trade, industry and commerce. Each Policy Committee had in turn an "Official Committee", headed by the Secretary to the Department and composed of Secretaries of related departments. Policy decisions arrived at by these two committees were submitted to the RCC for approval.

The general consensus in the discussions in the preliminary meetings of the RCC was that planning to be effective should be on an all-India basis even for Provincial subjects such as irrigation and electric power. It was suggested that the following ground work was necessary before a definite policy was arrived at:

(a) The broad policy to be followed as regards post-

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5 Proceedings of the First and Second Meeting of the Consultative Committee of Economists held at New Delhi on the 24th and 25th October 1941 and 6th and 7th March 1942, File No. ILD P/1945, Finance Dept. Planning Branch.

6 Letter to all Provincial Governments regarding "Acceleration of Reconstruction Planning". Government of India, Defence Department, New Delhi, January 13, 1944. File No.DWI-1(25)-CWINC/47.

TABLE II.1

Policy Committees for Economic Development

Subject	*Policy Committee responsible*	*Central Department responsible*
1. Irrigation	3(c) Public Work and Electrical Power	Labour Department
2. Electric Power Hydro Electric	3(c) Public Work and Electrical Power	Labour Department
3. Industries	4 Trade and Commerce	Industries and Civil Supplies Department
4. Road and Transport	3(A) Transport	War Transport and Post and Air Departments
5. Agriculture	5 Agriculture	E.H. & L. Department

war reconstruction and development *as a whole*.

(b) The detailed policy statement of *each subject* for which the Centre was responsible and the *policy recommendation* to be followed by Provinces and States in respect of those which lay within their competence.

(c) To translate these policies into definite plans both at the Centre and in the Provinces and the States.

The draft Statement of Policy about post-war reconstruction and development *as a whole* was to be prepared by the Secretary in consultation with the Department. The Departments were also to make a detailed Statement of Policy on subjects of their responsibility. Both statements were to be approved by the RCC.[7]

7 "Planning of post war development: A note by Secretary", R.C.C., 4th January 1944, File No. D.W. 1 (25) - CWINC/47, Labour Department.

A preliminary draft Statement was finalised in the meeting of the secretaries of the ministries in July 1943. The revised draft report, which was based on the views of the various Ministries of the Government of India, was placed before the RCC for approval in September 1944.[8]

The Reconstruction and Development Plan had a twofold aim, namely (a) to raise people's standard of living as a whole and ensure jobs for all, and (b) to ensure that produced wealth was distributed more equitably, without which people's living conditions could not be improved and their purchasing power could not be enhanced. Purchasing power was to be increased by improving the efficiency, and consequently productivity, of labour and at the same time developing and reorganising agriculture, industries and services. The Plan Document stated that "agriculture was and would remain India's primary industry but the present imbalance in economy had to be rectified by an intensive development of the country's industries so that both agriculture and industry could be developed side by side. The planning as contemplated was expected to result in better distribution of wealth.[9]

To realise this twofold objective, planning was to be both short term and long term. The short-term plan, termed as the Rehabilitation or Reconstruction Plan, naturally coalesced into the long-term policy of development. It included measures for

(a) the resettlement and re-employment of defence service personnel and of labour displaced from the war industry, military works, etc.;

(b) The conversion of industry from war to peace;

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8 Reconstruction Committee of the Council: Post-War Development Policy, Draft Report, 1944, File No. 1 (4) p/1945, Finance Dept. Planning Branch.

9 ibid., File No. 1(4) p/45, p.3.

(c) The removal or adjustment of controls to suit peace conditions.

The long-term planning and projects came under the heading of Economic Development. It was to be an all-India Plan, drawn on general lines for fifteen to twenty-five years or more, with a more detailed phased out plan for five years. Sectors coming under long-term planning were those involving large capital expenditure, and creating the infrastructure for development. These included:

(a) improvement in agriculture with the development of irrigation, anti-erosion measures, land reclamation and other measures;

(b) development of electric power, including hydro-electric, as the basis of industrial and agricultural development and with it pump irrigation and rural industry;

(c) Development of industry with special reference to the production of capital and consumer goods, and also the maintenance and development of small-scale and cottage industries; and

(d) Comprehensive development of road communications and transport services, especially in rural areas.

The plan called for a balanced development of the agricultural and industrial sector. Both needed development of irrigation and power. Both irrigation and power therefore received high priority in the long-term objective of the plan.

Overseeing this important aspect of development was Dr. Ambedkar. Being a member of the Central Cabinet, he was also a member of the RCC. President of the Policy Committee for Irrigation and Power and was also associated with its Official Committee. The task of the Policy Committee and its Official Committee was to study the problems affecting the

development of irrigation and hydro-electric power and suggest practical ways of solving them. By virtue of his position in all the three bodies, Ambedkar significantly helped in formulating the policy and action plan for the optimal development of water and power resources in India.

Though the RCC was the ultimate approving authority for the plan, the Ministries concerned were to do the ground work. At the Department level, the Policy Committee and Official Committee of which Ambedkar was President, were required to prepare four statements, namely:

(a) a statement regarding the broad policy of post-war reconstruction and economic development;

(b) a detailed statement of policy on subjects within the Department's jurisdiction, namely irrigation and power;

(c) an action plan; and

(d) policy stand on certain basic questions such as (i) the question of state versus private ownership of irrigation and hydro-electric projects and others; (ii) role of the State and the Centre in the development of irrigation and power; and (iii) areas for Central Government intervention or participation in these two subjects which were under the jurisdiction of the States.

The Labour Department's work was particularly difficult because, by the Act of 1935, both irrigation and electricity had been brought fully under the jurisdiction of the Provincial Governments, the Central Government's role being confined to mediation in inter-Provincial or Inter-State disputes.[10] This made an all India outlook difficult. The RCC, therefore, made it clear that "if the best results are to be obtained from irrigation electrical

10 N.D. Gulathi (1972), *Development of Inter-State Rivers Laws and Practice in India*, New Delhi: Allied, p. 27.

and industrial development, there must be either one all-India plan agreed to by all concerned, or a collection of related plans, which amount to much the same thing."[11] Drawing upon examples from the rest of the world, the Plan Document stated that

> It has been the experience of other countries with federal constitutions, the constituent States of which enjoy a measure of autonomy far greater than that enjoyed by the Provinces in India, that for the purpose of economic development they have to come together and formulate a common policy in the general interest of the country as a whole.[12]

Nevertheless, the Central Government went ahead with great caution, suggesting that "although it was necessary that planning to be effective should be on all India basis even for provincial subjects, it is intended to achieve this objective by means of adjustment, agreements and cooperation, with Provincial and State Governments."

Without coordination and inter-State cooperation it would have been impossible to realise the full potential of schemes for irrigation and hydro-electric power development, since water resources cannot be confined within manmade state boundaries. The Central Government's financial support was also necessary, for machinery and equipment, and training of technical personnel. In certain matters that needed unified direction, an autonomous authority at the national level but working in agreement with Provinces and States was considered desirable and similarly a regional authority for

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11 Letter to all Provinces, dated 13 January 1944, by Deputy Secretary, Government of Defence Department Subject: Acceleration of Reconstruction Planning File No. W II/39/44

12 Post-War Development Policy, Draft report, Reconstruction Committee of the Council, 1944, File No. 1 (4) p/1945, Finance Department, Planning Branch.

matters that required inter-Provincial and inter-State coordination.

Policy Statement on Irrigation and Power

For drawing up a detailed Policy Statement on irrigation and power development, the Labour Department had two options. One was to prepare a draft Policy Statement for circulation among the Provinces for feedback, based on which a final consensus Policy Statement was to be prepared. The other option was to go ahead and prepare an all-India Policy Statement for the consideration of the RCC. Though, initially, opinion veered towards the first option, the second option prevailed, the principal consideration being that this Policy Statement would serve as a guide to the Provinces to form their reaction. The Policy Statement was thus prepared by the Labour Department, which indicated the Central Government's approach both to the RCC and the Provincial Governments on the development of (a) irrigation, waterways and drainage; (b) development of electric power; and (c) inland water transport.

Irrigation, Waterways and Drainage

Development of irrigation, waterways and hydro-electric power, the Policy Statement said, was basic to the industrial and agricultural development of the country. Food supply and people's prosperity directly depended upon wider irrigation, soil conservation, and flood control. To increase food supplies and to make more land cultivable, major and medium schemes of irrigation were needed. Greater use of pumps was also to be made, the available supply of water in the existing canal systems increased, and measures taken against water logging.[13] The Policy Statement noted that:

1. The planning and execution of the work under this head rested primarily with the Provinces and

13 ibid, File No. 1 (4) p. 35.

the States. The Central Government would nevertheless offer all possible help by arranging priority supply of necessary materials and by providing technical assistance.

2. Wherever possible, the Central Government would also be prepared to consider Provincial and State projects on a regional basis. In certain deserving cases, financial assistance also could be considered.
3. The Central Government would address a detailed questionnaire to the Provinces and States about the projects they proposed and would have these proposals scrutinised by its engineering experts. A Consulting Engineer would be appointed for waterways and another for irrigation to work as a Development Officer.
4. The Central Board of Irrigation would be reorganised to function more effectively, not merely as a clearing house of ideas on irrigation, drainage and allied subjects but also as a board of referees on all pertinent matters.

Inland Water Transport

The use of inland water transport declined during the last century, partly because of competition from the railways and partly due to the deterioration of water ways, sometimes as a direct result of increased irrigation works. Inland water transport was revived during the wartime, because of the congestion on the railways. The main obstacle to significant development of this mode of transport, the Policy Statement said, was the condition of the waterways themselves. Inland waterways being a Provincial subject, the role of the Centre would largely be one of coordination and initiative wherever it was required.

The Policy Statement proposed the following measures to develop inland water transport:

(a) measures to improve the navigability of rivers and other existing waterways;

(b) possible use of irrigation canals for inland traffic;

(c) construction of new artificial waterways;

(d) increased use of steamers, tugs and power driven barges;

(e) development of country craft;

(f) meeting the competition from other forms of transport as well as coordination of all means of transport.

Development of Electric Power

All factors in the system that retarded the healthy growth of electric power needed attending to. The Policy Statement considered the production and distribution of electricity in India as a State or quasi-State enterprise.

1. In furtherance of this policy, Government secured the allotment of manufacturing capacity for additional heavy power equipment for several key electricity development undertakings in the country. A Central Technical Power Board was also to be set up at the Centre to work for the whole of India.

2. The Policy of furthering the industrial use of electricity was also accepted, e.g. by the manufacture of fertilisers etc.

3. To enhance large-scale development of electric power throughout India, personnel were to be trained abroad to provide expert commercial, administrative and technical staff for electricity undertakings.

New Water Policy:
Three Issues and Three Letters

The Policy Statement prepared by the Labour Department advocated far greater participation or partnership by the Central Government in the development of irrigation and hydro-electric power of the Provinces than was permitted under the 1935 Act. While the Centre made it clear that it did not wish to interfere with the freedom of the Provinces to draw up and execute their own plans, it also declared that "more positive participation by the Centre was necessary" in those irrigation and hydro-electric projects which involved more than one State and which required regional development of the entire river valley basin for the benefit of several Provinces and States.

The Act of 1935 virtually debarred the Central Government from assuming executive authority over Provincial subjects and from intervening in inter-Provincial matters. Section 135 of the Act provided for the appointment of an Inter-Provincial Council for the investigation and discussion of such matters and for making recommendations. It was, however, a purely advisory body, with no executive power.[14]

In the circumstances, the task before the Labour Department was threefold, namely:

(a) to develop a new instrument of executive authority for the regional control and management of projects on rivers flowing through more than one State;

(b) to evolve a definite development approach of water and hydro-electric power resources of inter-State rivers; and

14 Gulathi, op. cit., 80.

(c) to evolve an administrative set-up with a pool of technical experts to develop a national irrigation policy and render technical and other services to the Provinces.

In evolving a policy framework, the Provinces and the States had to be consulted. Accordingly, after a detailed discussion and consultation the Department addressed the so called "three famous letters" to the Provinces on "three issues". The letters forcefully articulated the irrigation and electric policy of the Centre, and resulted in the national water and electric policy, which continued in the independent period. The policy framework had three components, namely:

(a) adoption of a concept of River Valley Authority or corporation for the management and control of projects on inter-State rivers;

(b) adoption of the concept of regional and multi-purpose development of River Valley Basin as a whole; and

(c) establishment of administrative and technical expert bodies at the Centre. The Central Water-ways, Navigation and Irrigation Commission set up for this purpose was the precursor of the present-day Central Water Commission, and the Central Technical Power Board that of the Central Electricity Authority.

River Valley Authority

After long deliberation, the Department concluded that the most appropriate mechanism to implement inter State projects was an independent authority or a corporation, which would derive its authority through an agreement between the Provinces/States concerned and the Centre. The matter was explained in a letter sent in December 1944 to all Provinces (see Appendix II.4).

In cogency of argument and for its persuasive power, the letter of the Labour Department is something of a classic. It pointed out, succinctly, that developing the water and power resources of the country was a priority item with the Department, but a special difficulty was posed by those rivers whose waters passed through many Provinces and States. The river basins presented many and varied problems but the problem of preventing the larger rivers from inflicting devastating floods and utilising their waters to the benefit of all was a major one. The matter concerned not only the several Provinces and States through which these rivers passed but was closely connected with the development of India as a whole. A consolidated development scheme called for multi-purpose river management schemes on a regional basis and assistance in the river projects that concerned more than one Province. While in theory, the Provinces and States concerned could, by agreement come together and get down to rapid development, the reality could be different. A Province, finding its material and manpower resources fully occupied with projects seen by its administration to be of more benefit to its own people, might relegate to the background a project that would bring about regional development benefitting several Provinces and States. The Centre, entrusted with the development of the entire nation, might then find it desirable to ensure that such projects which benefited more than a State were not impeded by difficulties in arriving at an agreement. Given the constitutional difficulties, the Centre might in many cases be in a better position to promote an agreement between the Provinces and the States than the latter themselves. The most suitable manner of implementing an agreement would be by setting up of a corporation to administer the affairs of rivers to which power would be given by agreement between the Centre and the Provinces/States concerned.

The structure or the function and responsibilities of the proposed corporation or regional authority were not spelt out in detail at this time. This opportunity was provided by the Government of the United Provinces in the case of river Sone and by the Government of Bengal in the case of river Damodar.

With the right inputs, river Sone, it was felt, would provide excellent development opportunities to the region. To push through the programme, an inter-State conference was held in Delhi in March 1945. Emphasising the importance of the schemes to the economic development of U.P., Bihar, some Central Indian States and the Central Province, Dr. Ambedkar stated in the conference that if the Sone's potentialities were to be fully exploited it was necessary to have a regional rather than a local approach to the problem. Ultimately, therefore, there had to be an agreement to set up an appropriate organisation to which all the parties concerned would give, by agreement, certain powers relating to its field of operations, principal among which would be bulk supply of electricity and water for irrigation and navigation [15] (See Appendix II.1). In case a decision was taken to set up a Sone Valley Authority:

(a) Such Authority must be given, by the Provinces and the States, Power over the waters of the Sone and its tributaries.

(b) The Provinces and the States must agree that such Authority should have the sole right to generate electricity (except for nursery schemes) in the area covered by the Authority.

(c) The Provinces and the States must agree not to abstract water without the approval of the Authority.

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15 Proceedings of the meeting held on the 10th March 1945 to discuss certain proposals regarding the development of Sone Valley. File No. DW/IRI/336/9-P.45, Labour Department.

(d) The Provinces and the States in which dam sites would be situated would have to agree to the submergence of lands on such forms as might be arranged.[16] (See Appendix II.1).

Further, the Authority or the corporation would be set up by Central legislation but the Provinces and the States concerned would have to give, by agreement or by contract, such executive authority as vested in them for the erection of dams and otherwise dealing with the water of the rivers. The Authority to be constituted also needed to be given certain of the powers and responsibilities of the partner Provinces and States, and a measure of financial independence, if it was to achieve efficient development of hydro-electric power and irrigation.

The next big opportunity for consolidation of the new water policy came in the way of the Labour Department when, in August 1944, the Government of West Bengal forwarded a copy of the report of the Damodar Flood Enquiry Committee to the Government of India for consideration. As a follow-up, R.C. Casey, Governor of Bengal, wrote to the Viceroy shortly there-after suggesting that the water problem of West Bengal needed extensive study for solution (Appendix II.2). In its recommendation No. XIII, the Damodar Committee had stated that "it will be an advantage in the solution of flood control and soil conservation problems if forests and rivers of India are made the concern of the Central Government".

The response of the Labour Department to this proposal was, once again, positive. Replying on October 8, 1944, it said that having regard to the multi-purpose potentialities in any major scheme relating to the Damodar, the quickest and most

16 Proposal for a corporation to handle Sone Valley Authority. File DW/IRI/336/9-p/45, Finance Department, Planning Division.

efficient way of meeting the various problems would be through the agency of a duly constituted Regional Authority which would control the entire valley of the river and on which the Central Government and the Government of Bengal and Bihar were adequately represented (See Appendix II.2 and III.3).[17] In reply to the Governor, the Department said that

> as a start to the general approach my Government have already under consideration problems of the Damodar and the Sone. For the regional approach to the development of these rivers, there must be an agreement between the Provinces and States concerned and the Centre will do whatever is possible to promote such agreement (Appendix II.3).

In some cases it might be found advisable that the executive authority should be vested in a corporation or other body. In such cases, the Centre might be prepared to become a partner with the Province in the enterprise, the letter stated.

The Government of West Bengal, in a constructive approach, promptly agreed to take steps to consider setting up the Authority. It also suggested and hoped that "the Government of India will similarly set up such Regional Authorities in connection with other large rivers flowing through other Provinces and ultimately having an outlet in Bengal". As we shall see presently, the Labour Department had prepared two alternative models for the establishment of Damodar Authority for consideration by the Second Inter-Provincial Conference held in Calcutta in February 1945.

The result of the untiring efforts of the Labour Department was that an agreement was finally reached between the Central Government and the Governments of Bihar and West Bengal

17 A letter of Secretary Labour Department to Government of Bengal, October 8, 1944, File No. 75 D/359/44, Finance Department, Planning Division.

(the Governments participating in the Damodar Valley project) to form an Authority. This was given legal force when the Constituent Assembly (Legislature) enacted in 1948 the Damodar Corporation Act to provide for the establishment and regulation of a semi-autonomous corporation for the development of the valley.

The Damodar Valley Corporation was the first of its kind. With its establishment, the issue of management and control of irrigation and power projects on inter-State rivers was finally resolved.

Multipurpose and Regional Development of River Valley Basins

Multipurpose development of river basins recognises the interrelation of resource elements in a single basin. The need for integrated river basin development arises from the relationship between the availability of water and its possible uses in various sectors.

Multipurpose development is a concept of recent origin. When dealing with "interference with water supplies" the relevant provision of the Act of 1935 referred to "water from any natural source of supply". There was no mention of river valley basin or catchment. It is only since 1930 that emphasis has increasingly been placed in engineering practices, on the hydrological unity of a river basin and on treating the basin as the unit of development of its water resources. It goes to the credit of the Irrigation and Power Department, under the leadership of Dr. Ambedkar, that for the first time in India, in 1945-47 basin-wise plans of multipurpose development for the Damodar Valley and Mahanadi Valley were put forward.[18] In 1948, when the Constituent Assembly of India enacted the "Damodar Valley Corporation Act" for the establishment of Damodar Valley in the

18 Gulathi, op.cit., 32.

Provinces of Bihar and West Bengal, it defined "Damodar Valley" as including "the basin of the Damodar river and tributaries". The Electricity (Supply) Act, also passed in 1948, made it the responsibility of the Central Electricity Authority to examine whether any river works proposed by State Electricity Boards would prejudice the best ultimate development of the river and its tributaries for power generation, consistent with the requirements of irrigation, navigation and flood control. The stage was thus set for emphasis on optimum multipurpose river valley development, for which the ground work was done by Dr. Ambedkar and his Department during 1944-46 in connection with the river valley projects on Damodar, Mahanadi, Sone and other rivers.

The multipurpose development of water resources or on the basis of river valley basin was suggested for the Damodar Valley project by the Labour Department. In response to the proposal of the Government of Bengal, the Department in its letter of October 8, 1944 expressed its considered view

> that although the Bengal Committee have touched on the hydro-electric and irrigation aspects of the problems, their principal recommendations were conceived primarily as a flood control measure within the limits of the Province of Bengal. Such approach to the problem is *prima facie* inadequate.
>
> The Government of India feel that the Provincial Government will look at it from the coordinated economic development of the entire Damodar Valley and not only from the point of view of the requirement of West Bengal. Further, the multipurpose potentialities of Damodar Valley Scheme including irrigation (for agriculture); navigation, power and water supply to industry, prevention of erosion and of disafforestation and possibilities of afforestation should be solidly considered.

In the Calcutta Conference of January 3, 1944, Ambedkar argued that

> the project of damming the Damodar should have as its purpose not merely stopping the flood but also include the generation of electricity and supply of water for irrigation, navigation and industrial use. There has not been enough realisation that our policy for water-ways must be multipurpose policy so as to include all possible uses of water.

Similarly, the Labour Department also treated the Sone Valley Project as a multipurpose river management scheme covering not only the potentialities for irrigation by canals and perennial hydel power for the area but also for increased irrigation utilisation of such power for pumping from the tube wells or from the river and increased fertility by the dewatering in water logged area. Provision of cheap power for industrial development, improved supply of water for navigation on the Ganga and improved flood control were other important considerations.[19] The Labour Department suggested early technical enquiry to study the "planning and Finance Department, Planning Branch coordination of the requirements of Provinces both for water and power in respect of irrigation pumping, industrial and town loads requirement of rural development". Emphasis was also laid on integrated development approach of water and power resources and economic and social planning and development of the river valley basin. The Department observed:

> though such matters as the plans for industrialisation, social well-being, reforestation, relocation of population, roads and schools, provision of extra irrigation whether gravity or by pumping, cooperative

19 Letter of the Secretary, Labour Department to the Secretary to Government of U.P., C.P. and Bihar (Public Works Department), Department of Labour, Government of India, December 1944, File No. DW/IRI/336/98/45.

> development, fertiliser and farm demonstration programmes and the setting up of Provincial and municipal planning board must necessarily be for the Provinces and the States concerned, the River Valley Authority will have a clear interest in such developments and will be required to assist with its advice, the co-ordination and development of plans. There must be fullest cooperation between Authority and the Provinces/States, local bodies and with the people in the areas to be developed if the Authority is to be able to achieve the maximum good of which it is capable.[20]

Thus the Labour Department not only recommended multipurpose development of water resources but also wanted its planned development and utilisation (for the regional and overall socio-economic development of the entire river basin) to be carried out in close coordination with the Provincial and State Governments and local bodies. (Appendix II.5)

Technical Expert Bodies

Keeping in view the enhanced magnitude of projects, it was keenly felt around this time that the technical expert bodies then available at the Centre were not adequate. The Irrigation Adviser with the Government of India was concerned mainly with small, emergency irrigation projects under the Grow More Food campaign. The Central Board of Irrigation, on the other hand, essentially consisted of the Chief Engineers of Provinces. Functioning mainly through sub-committees working part time, it had no

20 Memorandum on Sone Valley Project, Proceedings of the Conference held on March 10, 1945 regarding the development of Sone Valley, File DW/IRI/336/98/45. Finance Department, Planning Division.

continuing influence on Provincial and States' policy.[21]

To make good the lacuna of a full-fledged Irrigation Commission, the Labour Department wrote to all Provincial and State Governments in December 1944 eliciting their views on the proposed Commission (Appendix II.4). It argued that

> there is a real need for an expert body capable of advising both the Government of India and when so required, Provinces in regard to waterways and irrigation problems and able in so far as Provincial autonomy permits to secure a measure of co-ordination in regard to waterways and irrigation throughout the country....
>
> increased attention.....must clearly be paid in this country of large waterways to the management of individual waterways as a whole, to the co-ordination of waterways policy as between Provinces, to the discussion and if possible settlement of principles governing rights in water and to the preparation of hydrological data and other statistical information on uniform lines. These are all matters on which a technically strong advisory body at the Centre can, in the opinion of the Central Government, perform useful functions, while it would also seem that such a body might, on occasion as required, be able to give useful advice to Provinces on technical matters, to help in the settlement, by agreement, of any disputes that might arise and to advise on the terms of any agreement under consideration between Provinces to ensure that they are clear and unequivocal. The Government of India feel that it is advisable that they should set up a Central Waterways and Irrigation Commission at the Centre.[22]

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21 Labour Department, "Setting up of the Central Waterways Irrigation and Navigation Commission on Permanent Basis". File No. DW1-(25) CWINC/47.

22 A letter to all Provincial Governments putting to them the proposal to create a Central Waterways and Irrigation Commission and asking whether Provincial Governments

While conceding that many of the problems which formed part of the proposed duties and responsibilities of the Commission fell within the Provincial legislative and executive sphere, the Labour Department made it clear that there was no intention to usurp or in any way encroach upon the duties and responsibilities of the Provinces. The Commission was intended to be a purely fact-finding and advisory body. Composed of expert members with competent and sufficient staff able to devote themselves whole time to the study of India's waterways and irrigation problems, it would coordinate information and would be available to study and help in treating waterways problems as a whole and to advise where required. The response from the Provinces, as we shall see later, was overwhelming. The result was that a resolution to set up the CWINC was approved by Dr. Ambedkar in March 1944 and subsequently by the Viceroy on April 4, 1945.

An identical technical body was recommended in the first meeting of the Policy Committee, held on October 25, 1943 for "public work and electric power". The proposed Central Technical Power Board at the Centre was to be a strong technical organisation designed to collect data, conduct surveys and prepare schemes for electrical development in consultation with Provincial and State Governments. It was to act as a central planning organisation to advise the Central, Provincial and State Governments in regard to the universally accepted policy of encouraging planning and pressing forward the widespread development of electricity supply throughout the country. The Board was established in November 1944

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welcome this proposal. Latter by Secretary, Labour, December 1944. File No.6(1) p./5. Finance Department, Planning Division I. "The Central Waterways and Irrigation Commission".

as a central planning organization, with the concurrence of the Provincial Governments.[23]

With the creation of these two strong technical organisations at the Centre, the stage was set for an all-India water and hydro-electric power policy. In its dedicated work of laying down the basic elements of the nation's present day water and power policy, the Labour Department had been notching one success after another. In a systematic manner, the Department developed the concept of Authority or Corporation to overcome the constitutional difficulties in the development of water resources of inter-State rivers, adopted the multipurpose development approach on the basis of river valley basin and created two technical expert bodies at the Centre, the entire exercise having been fulfilled in the short span of four years (1942-46). As we shall see in the next section, Dr. Ambedkar being in charge of the Department was instrumental in providing an appropriate lead and direction to the whole policy and planning process.

23 Government of India, Reconstruction Committee of the Council, Record of the first and second meeting of Policy Committee, No. 3-C (public work and electric power) held at New Delhi in October 1943 and February 1945. Manager Pub. 1944-45. File No. 6(6), p/45. Finance Department, Planning Branch.

CHAPTER III

AMBEDKAR'S INFLUENCE ON NEW WATER POLICY

Perspective of Economic Development

It has been seen that, as a member of Reconstruction Committee of the Council (RCC), President of the Policy Committee on Irrigation and Electric Power and with his close association with the Official Committee in the Labour Department, Ambedkar contributed in a significant measure to the making of policy on water resources and power, on which the policy of present day India is based. Records show that Ambedkar, with his academic knowledge of subjects like economics, constitutional law and politics, also contributed in evolving the developmental philosophy of these sectors.

Ambedkar's writings on economic policy were prolific, and their perusal offers us an insight into his thinking on development.[1] A careful analysis of his ideas brings out a well-articulated framework of economic development, and some of these ideas directly influenced the objectives and the strategy of the plan sector under his care. These included: emphasis on capital investment in agriculture and industrialization, more active and positive role for the

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1 Dr. Ambedkar's main academic works on Public Finance and Currency during 1915-25 include his M.A. dissertation "Administration and Finance of East India Company" submitted to the Columbia University, published in *Dr. Babasaheb Ambedkar: Writtings and Speeches,* vol.6, *On Economics*, Vasant Moon (ed.) Education Dept., Government of Maharashtra (1989); Ph.D. dissertation on *The Evolution of Provincial Finance in British India,* London*:* King and Son (1925) and D.Sc. dissertation, *The Problem of Rupees*, London: King and Son (1923).

State and emphasis on public sector with a definite place for the poor and the socially oppressed sections in the planned economic development of the country.

Ambedkar's views on economic development go back to the year 1918, when he participated in an academic debate on the problem of small holdings in India and its remedies.[2] Although his paper focused on the problem of small holdings, in its theoretical formulation, and implied solution, it contained a broad framework for economic development. Beginning with a discussion of the problem arising out of the smallness of land holdings, it went on to analyse the backwardness of the agricultural sector as a whole and ended with the proposed solution of capital investment in agriculture and industrialisation for the overall development of the economy.

Carefully working out the theoretical logistics of the proposed strategy, Ambedkar's analysis covered the issue of how to enlarge small and scattered land holdings, and keep them consolidated. The underlying assumption that fragmented land holdings were too small to be economically efficient. Many argued that the solution to consolidate small and scattered holdings was through voluntary or compulsory exchange of owned land. Therefore, for them the question of enlargement of farm size was a practical programme to be realised through administrative and legal measure. For Ambedkar, consolidation of holdings was a practical programme while their enlargement was theoretical one, demanding discussion of economic principles which could be said to govern the size of the farm. He argued that the evil of small land holdings in India was not fundamental but derived from the parent evil of maladjustment in her social economy.

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2 B.R. Ambedkar,"Small Holdings in India and their Remedies", *Journal of Indian Economic Society*, vol. I, 1918.

Maladjustment resulted mainly on account of distortions in the factor market. While capital (in the form of capital goods and implements) was scarce in relation to land, and land (agricultural) was scarce in relation to rural population/holdings, the stock of labour force was disproportionately high. The availability of land and capital in relation to each other being limited, this posed major constraints on the optimum use of resource inputs. Ambedkar provided extensive evidence for the decline of average size of land holdings and the amount of capital goods and implements used in agriculture. A survey about deficiency of agricultural stock such as ploughs, cattle, irrigation wells and manure had, for example, revealed that:

> the ryots have a keen eye to the result of a good system of farming as exhibited on model farms, but they can't derive much good from the knowledge though they may take it in and thoroughly understand that superior tillage and proper manuring means a greater outturn in crops. Their great want is capital....the farmer knows that agricultural equipments are insufficient and antiquated but he cannot substitute better ones in their place for... a superior class of cattle and superior farm implements means to him so much outlay of what he has not --- money.

Given this state of affairs, not only the existing equipment was inadequate for the large holdings but for the existing holdings, small as they were, Ambedkar argued.

Why was capital investment in the form of agricultural implements so low? Ambedkar stated that capital arises from saving and saving is possible where there is surplus. India's agriculture-the mainstay of her population-gave them no such surplus. Because of the pressure of population on land, output per worker was low. A large agricultural population in relation to agricultural land in actual

cultivation meant that a large part of the agricultural population was superfluous and idle. The economic consequence of idle labour was twofold. First, given the lack of alternative job opportunities, the enormous population pressure led to subdivision of land into small and marginal holdings. Secondly, since idle labour continued to depend on agriculture, it reduced the income per worker to barely subsistence level: it left no scope for saving and capital investment in agriculture. Ambedkar observed that

> Idle labour and idle capital differ in one very important respect: Capital exists, but labour lives. That is to say, capital when idle does not earn but does not also consume much to keep itself. But idle labour, earning or not, consumes in order to live.

This invariably led to the depression of average income. No wonder our economic organisation was conspicuous for want of capital. Capital was nothing but crystallised surplus; and surplus depended upon the proceeds of effort. Where there was no effort there was no earning, no surplus, and no capital.

Productivity of agriculture could be increased, according to Ambedkar, by simultaneously expanding capital and capital goods, and reducing labour to raise land and labour productivity. If the stock of capital goods alone was increased, without reducing surplus labour, the problem of small and scattered land holdings would not be solved. In fact it would be aggravated as long as the stock of idle labour continued to increase. This would further subdivide the holdings, and reduce labour productivity.

Ambedkar therefore argued for a strategy of transferring labour from agriculture to other sectors of the economy. He advocated that

> the sponging off of surplus labour in non-agricultural channels of production will at one stroke lessen the pressure and destroy the premium that at present weighs heavily on the land in India. Besides, this

> labour when productively employed in agriculture and industrial sector will cease to live by predation and will not only earn its keep but will give surplus; and more surplus is more capital.

In short, according to Ambedkar, industrialising India was the surest remedy for her agricultural problems. The cumulative effects of industrialisation, namely a lessening of pressure on land and increasing amount of capital and capital goods would forcibly create the economic necessity of enlarging the holding. Not only this, industrialisation by cancelling the premium on land would give rise to few occasions for subdividing and fragmenting it. Industrialisation would be the most effective barrier against subdivision and fragmentation. Ambedkar did not rule out direct capital investment in agriculture to improve land productivity, but believed that improvement in labour productivity would be a better source of surplus and capital investment in agriculture. In his theoretical formulations, we can see his affinity to Arthur Lewis model of economic development based on the existence of unlimited supply of labour, to others based on inter-sectoral linkages of labour and capital, and also to the underlying economic assumptions of the India strategy of planned economic development.[3]

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3 See Sukhamoy Chakravarty (1987), *Development Planning: The Indian Experience* Delhi: Oxford University Press, Professor Chakravarty writes:

> The underlying causes of structural backwardness were perceived as follows. *First,* the basic constraint on development was seen as being an acute deficiency of material capital, which prevented the introduction of more productive technologies. *Secondly,* the limitation on the speed of capital accumulation was seen to lie in the low capacity to save. *Thirdly,* it was assumed that even if the domestic capacity to save could be raised by means of suitable fiscal and monetary policies, there were structural limitations preventing conversion of savings into productive investment.

Capitalism and Parliamentary Democracy

In Ambedkar's view, the capitalistic system and the parliamentary form of government despite their coexistence for a long time was marked with some painful contradictions. As early as 1943, he observed that "those who are living under the capitalistic form of industrial organisation and under the form of political organisation called parliamentary democracy must recognise the contradiction of their systems".[4] The first contradiction concerned the contradiction between the political and the economic system. "In politics, equality, in economics, inequality. One man one vote, one man one value is our political maxim. Our maxim in economics is a negation of our political maxim", he observed. The second contradiction was between fabulous wealth and abject poverty coexisting. There might be difference of opinion about resolving these contrasts, but not on their existence.

Referring to the first, Ambedkar observed that although parliamentary democracy started with equality in politics by ensuring one man one vote, it had not been standing still. It has progressed by expanding the idea of equality in political rights and recognised the principle of equality of social and economic opportunity. The hope, however, had not been fulfilled, on account of wrong ideology and wrong organization or both. Speaking about ideology, he said that what had adversely affected parliamentary democracy was the idea of "freedom of

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Fourthly, it was assumed that whereas agriculture was subject to secular diminishing returns, industrialisation would allow surplus labour, currently underemployed in agriculture to be more productively employed in industries which operated according to increasing returns to scale (p.9).

4 B.R. Ambedkar (1943), First Sessiion of Plenary Labour Conference on Social Security, *Indian Information*, September 1943, pp. 143-4.

contract". This idea had become sanctified and was upheld in the name of liberty. Parliamentary democracy took no notice of economic inequalities and the result of "freedom of contract" on the parties to the contract, if they were unequal. In the name of "freedom of contract", the strong were given an opportunity to defraud the weak.[5] The result was that the parliamentary system, in claiming to be a protagonist of liberty had continuously added to the economic wrongs of the poor, the downtrodden and disinherited classes.

Also, this ideology refused to entertain the possibility that parliamentary democracy might not succeed or the fact that there would be serious discontent if there was no social and economic democracy at its base. Social and economic democracy were the tissues and the fibre of parliamentary democracy. Parliamentary democracy developed a passion only for liberty. But liberty to be real must be accompanied by certain social and economic conditions. First, there had to be social equality. Privileges tilted the balance of social action in favour of their possessors. The more equal the social rights of citizens, the more able they were to utilise their freedom. Therefore, if liberty was to move to its appointed end, it was important that there should be social equality. In the second place, there had to be economic security. He wrote:

> A man may be free to enter any vocation he may choose....yet if he is deprived of security in employment he becomes a prey of mental and physical servitude, incompatible with the very essence of liberty. The perpetual fear of the morrow, its haunting sense of impending disaster, its fitful search of happiness and beauty which perpetually eludes, shows that without economic security, liberty is not

5 B.R.Ambedkar(1943),"Labour and Parliamentary Democracy". Vasant Moon (ed), Dr. Babasaheb Ambedkar, Writings and Speeches, vol 10, Govt of Maharashtra, 1991.

worth having. Men may well be free and yet remain unable to realise the purpose of freedom.[6]

Parliamentary democracy, he wrote, made not even a nodding acquaintance with economic equality. "It failed to realise the significance of equality and did not even endeavour to strike a balance between liberty and equality, with the result that liberty swallowed equality and thus left a progeny of inequities."[7]

Referring to the second contradiction, Ambedkar observed that in a social economy based on private enterprise and pursuit of personal gain, many people both employed and unemployed had to relinquish their rights in order to gain their living and subject themselves to be governed by a private employer. The assumption in the capitalistic system was that the State should refrain from intervention in private affairs, economic and social, which would result in liberty. But for whom was liberty? To the landlord to raise rent and reduce wages, and for the capitalist to increase hours of work and reduce the rate of wages? It could not be otherwise. For an economic system employing armies of workers producing goods en masse at a regular interval, someone had to make rules so that the worker would work and the wheel of industry would turn. If the State did not do it the private employer would do it, and do it to his advantage.

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6 B.R. Ambedkar (1987), "Philosophy of Hinduism", in *Dr. Babasaheb Ambedkar: Writings and Speeches*, vol. 3, op. cit., p.25.

7 B. R. Ambedkar (1943)
Dr. Ambedkar added: "Why did parliamentary democracy collapse so easily in Italy, Germany and Russia? Why did it not collapse so easily in England and USA? To my mind there is only one answer-namely there was a greater degree of economic and social democracy in the latter countries than existed in the former. Social and Political democracy are the tissues and fibres of political democracy. The tougher the tissue and fibre, the greater the strength of the body."(page 108).

To protect the right of the employed as well as unemployed to liberty and to the pursuit of happiness, the most that democratic governments did was to impose arbitrary restraints in the political domain. But such a remedy was of doubtful value. Given that even under adult suffrage all legislatures and governments are controlled by the more powerful, an appeal to the legislature to intervene was a very precarious safeguard against the invasion of the liberty of the less powerful. As an alternative, he suggested limiting not only the power of government to impose arbitrary restraints but also of the more powerful individuals. This was to be done by withdrawing from the more powerful their control over the people's economic life.[8] The State had to intervene actively to plan the economic life of people on lines which would lead to the highest productivity without closing every avenue to private enterprise, and also provide for equitable distribution of wealth. Ambedkar's proposal was for State ownership in agriculture and a modified form of State socialism in the field of industry and insurance. The State had the obligation to supply the necessary capital for agriculture and industry. Public sector enterprises were to be run most efficiently, with the highest level of productivity possible. He observed, for example, as regards the structure and nature of the Damodar Valley Corporation:

> I am not prepared to accept that the project should be run on non-profitable basis. Nor do I accept that any profit which may accrue after meeting all proper charges shall only be used for reduction of capital expenditure and for betterment of the system. It is impossible to forget the fact that a large part of the misery of the people of the country is entirely due to the inadequate revenue resources of the government.

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8 B.R. Ambedkar (1947), *State and Minorities: What Are their Rights and how to Secure them in the Constitution of Free India*, Bombay: Thacker & Co.

> The object of the government business concern is to enable the government to make a profit as any business concern does in order to supplement its resources. I am therefore quite unable to see any justification for ruling out this important purpose from the contribution of Damodar Valley Authority.[9]

Thus, while Ambedkar saw no alternative to democracy and therefore firmly believed in it as an appropriate form of political organisation, at the same time he emphasised the need to strengthen the social and economic foundations, which he saw as the tissues and fibres of political democracy. He, therefore, advocated a political-economic framework namely constitutional State socialism with parliamentary democracy so that the social and economic organisation would be more egalitarian and consequently, the political means would become more meaningful to the poor and underprivileged. This perspective shaped his thinking on irrigation and electric power policy, and left their imprint on the Labour Department's outlook on questions like State vs private ownership of irrigation and electric power projects, the financial principles governing public bodies, and the place for the poor in the planning of irrigation and electric power projects.

Post War Plan: Development Strategy Restated

The Planning Committee at the Centre had to decide on two fundamental issues. These were, (a) the objective of the Plan, and (b) whether its main thrust was to be confined to rehabilitation or reconstruction alone or should it include measures for economic development; and if the latter, what was to be the strategy of development. On both questions, Ambedkar contributed his viewpoint, moulding the focus of the Plan in favour of economic development.

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9 Minutes of the First Conference on Damodar River Valley project. File No. DW-105 (1)/45DWI, Finance Department, Planning Division.

Speaking on the nature of the Plan he observed that 'the Reconstruction Committees were no doubt modelled, so far as intention and purpose were concerned, on the Reconstruction Committees which had come into existence in most European countries whose industrial organisation had been destroyed in the war". The problems of reconstruction however should differ and must differ from country to country, he maintained. In the countries of Europe and in some Asian countries the problem of reconstruction was a problem of reconditioning run down plant and machinery. For India Ambedkar argued that:

> The problem of reconstruction in India must include consideration of all questions with which other countries engaged in war are concerned. At the same time we must not forget that the problem of reconstruction in other countries is eventually different from the problem of reconstruction in India. In other countries the problem of reconstruction is a problem of rehabilitation of industry, which had been in existence. The problem of reconstruction in India as I see it, is a problem mainly of the industrialisation of India as distinguished from the rehabilitation of industry and industrialisation.[10]

As it turned out, the reconstruction plan for India did cover measures both for rehabilitation and economic development.

Ambedkar appears to have significantly influenced the decision on the strategy of economic development as well. We have seen his earlier thinking on development strategy. This was again reflected in his Plan strategy. He emphasised the need for industrialisation for overall economic development as well as for development of the agriculture sector. Poverty in India, in his view, was

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10 Government of India, Reconstruction Committee of Council (1944), Record of the first meeting of the Policy Committee

strategy. He emphasised the need for industrialisation for overall economic development as well as for development of the agricultural sector. Poverty in India, in his view, was mainly because India was solely dependent upon agriculture. Agriculture had failed to produce sufficient food to feed the people because of the maladjustment of the social economy of the country. Writing about the situation during the 1940s, he observed that

> India was caught between two sides of a pincer, the one side of which was progressive increase of population on land and the other was a progressive increase in deterioration of the soil. The result was that at the end of a decade we were left with a negative balance between population and production and a constant squeezing of standard of living. At every decade the negative balance between population and production was increasing in alarming degree, leaving India with the inheritance of poverty, more poverty and chronic poverty...

This process, he said,

> could be stopped when agriculture was made profitable. Nothing could open possibilities of making agriculture profitable except a serious drive in favour of industrialisation. For it is industrialisation alone which could drain away the excess of population, which was exerting such enormous pressure on land, into gainful employment other than agriculture.

The possibility of direct capital investment in the agricultural sector, for the balanced development of the economy, was not ruled out. He emphasised, however, industrial development in order to raise labour productivity and resultant surplus and capital through the reflex effect of industrialisation. The strategy of economic development enunciated in his theoretical paper reviewed earlier was thus restated

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No. 3C (Public Works and Electric Power); held at Delhi on September 23, 1943, Magazine, Government of India.

twenty-five years later in 1943-44. Some elements of which were eventually incorporated in the objective of the reconstruction plan. This becomes obvious from the following statement of objectives in the Plan paper:

> The ultimate object of all planning must be to raise the standard of living of the people as a whole and to ensure employment of all. To that end, the purchasing power of the people must be increased by improvement in the efficiency and consequently the productivity of labour on the one hand and simultaneous development and a reorganisation of agriculture, industries and services on the other.

And further:

> Agriculture is and will remain India's primary industry but the present imbalanced economy has to be rectified by intensive development of the country's industries so that both agriculture and industry may develop side by side. That will enable the pressure of population on the land to be relieved and will also provide the means required for the provision of better amenities for the people in the way of education, sanitation, public health, housing etc.

Development of infrastructure such as electric power, irrigation, roads, communication and transport services were treated as prerequisites for industrial development and therefore received top priority in the Plan strategy. It was believed that development of infrastructure would bring a relatively higher annual rate of growth in industrial output and employment than the rural labour force and help to absorb the surplus labour from agriculture. In a Policy Committee on Public work and Electric Power, Ambedkar emphasised that the country needed "cheap and abundant electricity". Without it, no effort for industrialisation could succeed. Development of irrigation and electric power were long-term projects involving large capital

expenditure. The development of electric power (and road transport and communication) was crucial for industrial and agricultural development. Improvement in irrigation facilities was expected to raise agricultural productivity. Anti-erosion measures and land reclamation were other necessary measures for improving agricultural efficiency.

Irrigation Development, Labour and the Poor

Given the limitation of the capitalistic form of economic system under parliamentary democracy in ensuring economic security to the masses, Ambedkar argued for an important place to the "labourer" and the "depressed classes" in the planned economic development of the country. He was particularly concerned that planned economic development should not only develop programmes but translate them in terms which the common man could understand, namely, peace, housing and enough clothing, education, good health and, above all the right to work with dignity. The State could not be content with securing merely fair conditions of work for labour but fair conditions of life. A great responsibility lay on the State to provide the poor with facilities for the growth of individuals according to their needs. To do that, the government could not be a government of 'laissez faire'; it would have to be government essentially based on a system of control.

Influenced by Ambedkar's thinking on the problems of labour, the issue of "labour" was accorded an important place in the objective of the post-war plan of economic development, which was declared to be:

> to raise the standard of living of the people as a whole and to ensure employment for all. To that end the purchasing power of the people was to be increased by improvement in the efficiency and consequently the productivity of the labour on the one hand and

simultaneous development and reorganisation of agriculture and industries and services on the other.

Labour was to be made more productive (in order to raise productivity in agriculture and industry) through several measures. Providing various amenities free or subsidised to labour classes, such as education up to the age of 14, medical relief, water supply, and other public utility services including electric power, would improve the health and efficiency of labour. Other measures in this direction would be attempts to secure a fairer wage deal for labour, maternity and sickness benefit, holidays etc. would have the same effect. Many of these schemes for labour were undertaken by the Labour Department under Ambedkar's advice.

In the view of Ambedkar, the Scheduled Castes and depressed classes needed to be treated as a separate entity for the purpose of planning,[11] and this provision was incorporated in the Plan objective. The Plan Document stated that:

> One of the objectives of the government would be to take steps to ameliorate the condition of the Scheduled Castes and backward classes. Care must be taken to see that social amenities such as education, public health, water supply, housing, which are meant to be provided under the plan, work especially for the benefit of such classes and that handicap of ignorance

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11 (i) The 10th meeting of Reconstruction Committee of Council held on September 11, 1944 which discussed the objective of the plan, recorded that

There was a case for treating the Scheduled Castes and Depressed Classes as a separate entity for the purpose of planning. Honourable Member of Labour, Dr. Ambedkar said that he would like to suggest certain amendments on these lines.

Minutes of the 10th meeting held on September 11, 1944, Reconstruction Committee of the Council, 2/10/121, 1945.

(ii)Reconstruction Committee of Council, Post-War Development Policy, Draft Report, 1944. File No. 1(4) P-45, Finance Department, Planning Division.

> and poverty under which they now labour is offset by special concessions in the shape of educational facilities, grant scholarships, hostels, improved water supply and similar measures. It would be the special responsibility of the government to see that early measures are taken to remove the handicap of these classes and help them to raise their level to that of their more fortunate fellow citizens. The provision of full employment as well as various measures of social security contemplated under the section on labour would also automatically benefit the backward and the depressed classes.

The Central Government's irrigation and electric power policy during 1942-44 reflected this view of Ambedkar on the poor and their place in planned economic development of the water resources of the country. He urged the policy makers to incorporate measures in the irrigation development policy to benefit the poor and oppressed section of society. No doubt Ambedkar was in favour of improvement in production efficiency. He wanted public sector enterprises to earn reasonable profit, and stick to the principle of no-loss, no-profit. But like Jawaharlal Nehru, he was not merely a growth-maximiser of national income. He did talk about letting the national income grow large enough before adequate standard of living could be provided for all. At the same time, he was very much concerned about the distribution of national income to the common man. In 1943 he emphasised that

> We must be prepared for the revaluation of the value. It will not be enough to make industrial development of India as a goal. We shall have to agree that any such industrial development shall be maintained at a socially desirable level. It will not be enough to bend our energies for the production of more wealth in India. We shall have to agree not merely to recognise the basic right of all Indians to share in that wealth as a means for a decent and dignified existence, but

> devise ways and means to ensure him against insecurity.[12]

This view was emphasised in the formulation of an irrigation and hydroelectric policy for India. In October 1943, in his presidential address to the Policy Committee on electric power, Ambedkar pointed out the significance and the ultimate objective behind the need for electrical development in India and said:

> Before I conclude may I make a few observations pointing out the significance and the ultimate objective that lies behind the need for electrical development in India? It is necessary that those who are placed in charge of the subject should have the fullest realisation of the significance and its objectives. If you agreed with me in this I will request you to ask yourself a question, Why do we want cheap and abundant electricity in India? The answer is that without cheap and abundant electricity no effort for the industrialisation of India can succeed. ..... Ask another question, Why is industrialisation necessary? and you will have the full significance made clear to you at once, for the answer to the question is, we want industrialisation of India as the surest means to rescue the people from the eternal cycle of poverty in which they are caught. Industrialisation of India must; therefore be grappled with immediately.

He went on to add that India would have to tackle the problem connected with electricity in an earnest, statesman-like manner, thinking in terms of human life and not in terms of competing claims of the Centre versus the Provincial Government.

A similar emphasis was to be accorded in planning to the development of irrigation. In his presidential address to the Conference on

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12 B.R. Ambedkar (1943), "First Session of Plenary Labour Conference: Dr. Ambedkar on Social Security", *Indian Information*, September 15, p. 105.

Multipurpose Development of Damodar Valley, Ambedkar stressed that

> the Centre expect the Provinces to bear in mind the absolute necessity of ensuring that the benefits of the project get ultimately right down to the grass roots i.e. everyone living in the valley and some of those in the vicinity, all have their share in the prosperity which the project should bring. This, in my view, is essential and for this reason we want the establishment of some agency early enough so that agency can set about planning at once in a manner in which its essential and ultimate objective can be secured.[13]

At another place he observed:

> I hope we shall be guided by the right spirit, leaving aside all sectional points of view, and proceed to our business with a determination to agree upon the best solution and open a way to the inauguration of a new policy in regard to our waterways and lay the foundation for a regime of prosperity for the poverty stricken millions of this country.[14]

Conservation of Water Resources

The key elements of the new water policy, mentioned in an earlier section, constituted: (a) adoption of a multipurpose approach for water resources development on the basis of river valley basin; (b) introduction of the concept of river valley authority; and (c) creation of technical expert bodies at the Centre to promote development of water and power resources. On each of these, Ambedkar had views of his own. In the period 1943-46, when the new policy was evolved, he actively participated in all discussions and expressed his views through

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13 B.R. Ambedkar (1945), "Multipurpose Development of the Damodar Valley", August 23, 1945, *Indian Information*, Delhi, October 10.

14 B.R. Ambedkar (1945), Damodar Valley Scheme, Presidential Address, First Calcutta Conference, January 3, 1945, *Indian Information*, February.

presidential addresses and lectures. Between November 15, 1943 and November 8, 1945 he addressed five conferences, of which two were on the Damodar Valley Project, both held at Calcutta (January 3 and August 23, 1945), one on the Mahanadi Valley Project (Cuttack, November 8, 1945) and two on Electric Power (Delhi, November 15, 1943 and February 15, 1945).[15] Besides the records of the Labour Department, these five addresses contain his thinking on the issue of water resource development in the country.

In a conference on the development of Orissa rivers, Ambedkar expressed his views about conservation and use of water resources. He referred to the recommendations made by the various committees, starting with the first Committee in 1872 to the Orissa Flood Advisory Committee of 1945.[16] Criticising the remedies suggested by these committees, he observed:

> With all respect to the members of these Committees, I am sorry to say that they did not bring the right approach to bear on the problem. They were influenced by the idea that water in excessive quantity was an evil, that when water comes in excessive quantity, what needs to be done is to let it run into the sea in an orderly flow. Both these views, ... are now regarded as

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15 The Conference addressed by Dr. Ambedkar during 1943-45 include chronologically:

a) Post-War Development of Electric Power in India, October 25, 1943;
b) Damodar Valley Scheme, First Calcutta Conference, January 3, 1945;
c) Post-War Electric Development February 2, 1945;
d) Multi-Purpose Development of Damodar Valley Second Calcutta Conference, August 23, 1945;
e) Multi-Purpose Plan for Development of Orissa Rivers, November 8, 1945.

16 B.R. Ambedkar (1945), "Multi-Purpose Plan for Development of Orissa Rivers,"Presidential Speech at Cuttack Conference, November 8, 1945, *Indian Information*, December 15, p. 304

> grave misconceptions, as positively dangerous from the point of view of the good of the people.[17]

Man suffers more from lack of water than from excess of it, Ambedkar said. Not only was nature niggardly in the amount of water it gave, it was also erratic in its distribution, altering between drought and storm. But this could not alter the fact that water was wealth. Water being the wealth of the people and its distribution being uncertain, the correct approach was not to complain against nature but to conserve water.[18] Ambedkar thus looked at the problem of flood or excess of water in a different manner and focused more on the brighter and the positive aspects of the water problem.

Multi-Purpose Reservoirs and Regional Development

Since in the earlier approach, excess water was considered to be a major problem, the remedy suggested was single-purpose in nature, namely to control floods. Ambedkar differed with those who believed in a single purpose approach. He observed that "if conservation of water was mandatory from the point of view of public good, then obviously the plan of embankments was a wrong plan. It was a means which does not subserve the end, namely conservation of water, and must, therefore, be abandoned. "The appropriate method, according to him, was to follow the approach adopted by some developed countries, that is, "to dam rivers at various points to conserve water permanently in reservoirs" and put it to multipurpose use. Such reservoirs, besides irrigation, could be used for generating electric power and navigation. He particularly emphasised the use of rivers for navigational purpose. In the Conference on Orissa Rivers (November 8, 1945) he observed:

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[17] B.R. Ambedkar, op.cit., 1945 p. 304, First Orissa Conference, Cuttack.

18 ibid., pp. 305-6.

> Navigation in India has had a very chequered history. During the rule of the East India Company, provision for international navigation occupied a very prominent part in public works budget of the Company's government. Many of the navigation canals we have in India today.... are remnants of that policy. Railway came later, and for a time the policy was to have both railways and canal navigation. By 1875, there arose a great controversy in which the issue was railways versus canals. The battle for canals was fought bravely by late Sir Arthur Cotton..... Unfortunately supporters of railways won.

He added:

> I am not quite happy about this victory of railways over canals. Much more annoying is the opinion of supporters of railways that canals must go because they do not pay without knowing that if the canals do not pay it is not because they cannot pay but because their capacity to pay has been terribly mutilated by leaving them uncompleted. I am sure that internal navigation cannot be neglected in the way in which it has been in the past. We ought to borrow a leaf from Germany and Russia in this matter and not only revive reconstruction of our old canals but make new ones also and not to sacrifice them to the exigencies of railways.[19]

The storage scheme that Ambedkar visualised would not only give irrigation and electricity but also provide a long line of internal navigation. He believed that the multipurpose use of water would convert the forces of evil into powers of good. This perspective he subsequently emphasised for projects on Damodar, Mahanadi, Sone and other inter-State rivers. In the first Conference on Damodar Valley Project (Calcutta, January 3, 1944), Ambedkar asserted:

> The Damodar project must be multipurpose project.... it should not only deal with the problem caused by

19 B.R. Ambedkar (1944), op cit., First Calcutta Conference, p. 223.

> floods, it should also provide for irrigation, electricity and navigation....There has not been enough realisation that our policy for water resource development must be multi-purpose policy so as to include all possible uses of water.

The Damodar Valley project was to be the first in a series, he said. [20] He reiterated his belief in multipurpose projects in the second Conference on the Damodar Valley Project (Calcutta, August 23, 1945). He stressed that

> the issue before us is whether we should be content with damming the river for the purpose of stopping the flood only or whether we should make it a multipurpose project so as to cover generation of electricity and supply of water for irrigation and navigation also .... the consensus of the opinion should be that we go for the latter.

Similarly, the Sone Valley Project was treated as a multipurpose river management scheme covering not only the potentialities for irrigation by canals and perennial hydel power for the area but also for increased utilisation of such power for agricultural development such as for pumping from the tube wells and increased fertility by dewatering in water-logged area, provision of cheap power for industrial development, improved supply of water for irrigation on the Ganga and improved flood control. Opening the Conference on Sone Valley in March 1945, Ambedkar highlighted the importance of the scheme to the economic development of U.P., Bihar, and some of the Central Provinces and States. He emphasised that if the possibilities of the scheme were to be fully exploited it was necessary to make a regional rather a local approach to the problem. [21]

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20 B.R. Ambedkar (1945), Second Calcutta Conference on Damodar, August 23, 1945, p. 284.

21 Proceedings of meeting on March 10, 1945 reg. Sone Valley, File D.W./IRI/336-p/45, Finance Dept., Planning Branch.

Ambedkar stressed the multipurpose use of water even more emphatically in the case of the Mahanadi river. Referring to the water problem, he stated that

> Orissa must .... adopt the method which the U.S.A adopted in dealing with the problem of its rivers ... that method was to dam rivers at various points to conserve water permanently in reservoirs. Such a storage scheme as applied to the rivers of Orissa will have the special feature, namely, that it will not only give irrigation and electricity, but also provide a long line of internal navigation.... my comment is that this should be regarded as the only method and treated as an immediate programme rather than as an ultimate aim.[22]

In the Conference on Orissa's rivers, he urged the participants to adopt the regional approach:

> For a balanced appreciation of the situation it is necessary to carry out comprehensive surveys and investigations with a view to ascertain the possibilities of irrigation, navigation, power development and their facilities in delta as well as in the drainage as a whole. Investigations so far carried out have been mostly limited to the delta. [23]

He stated that the project could be a success if only it was treated as a regional project. It could not succeed with local treatment.

The systematic steps towards the introduction of the concept of River Valley Authority for projects on inter-State rivers and creation of two technical expert bodies at the Centre, namely the Central Waterways, Irrigation and Navigation Commission and the Central Technical Power Board were attempts to provide technical advice for the multipurpose

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22 B.R. Ambedkar(1945) op.cit., Multi-Purpose plan for Development of Orissa's Rivers, Cuttack Conference, November 8.

23 B.R. Ambedkar, First Calcutta Conference on Damodar, January 3, 1945, p. 223.

development of water resources on regional basis. He made this clear in the first calcutta Conference (January 3, 1944):

> as a preliminary step for securing the best use of water resources of the country the Government of India have created a central organisation, called the Central Technical Power Board, and are contemplating to create another to be called the Central Waterways, Irrigation and Navigation Commission. The objects which have led to the setting up of these two organisations are to advise the Provinces on how their water resources can be best utilised and how a project can be made to serve purposes other than irrigation. [24]

A similar association was highlighted in the Conference on River Sone. Ambedkar emphasised on the occasion that if Sone's possibilities were to be fully exploited it was necessary to make a regional rather than a local approach to the problem. He urged all parties to realise that this meant that ultimately there must be an agreement to set up an appropriate organisation to which they would give certain powers relating to the subjects which would be handled by this organisation, the principal of which would be to supply the bulk of electricity and water for irrigation and navigation.[24]

Ambedkar expounded the nature of the new water policy in the First Calcutta Conference. He said:

> It is not far from true to say that so far there has been an absence of positive all-India policy for development of water resources. There has not been enough realisation that our policy for waterways must be multipurpose policy so as to include the provision for irrigation, electrification and navigation. Government of India is very much alive to the disadvantage arising

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24 B.R. Ambedkar, (1945), Proceedings of the meeting on Sone Valley Project held on March 10, 1945.

> from the present state of affairs and wishes to take steps to evolve a policy which will utilise the water resource of the country to the best advantage of everybody and to put our water resources to the purpose which they are made to serve in other countries.[25]

Multipurpose use of water resources for the regional development of the entire river valley basin was the key element of the new water policy. The adoption of the concept of River Valley Authority (to overcome the jurisdictional problem on inter-State rivers) and the creation of two technical expert bodies at the Centre were means to achieve this objective.

25 B.R. Ambedkar (1944) Second Calcutta Conference on Damodar, January 3, 1945, p.97.

CHAPTER IV

ESTABLISHMENT OF CENTRAL WATERWAYS, IRRIGATION AND NAVIGATION COMMISSION

Introduction

A significant achievement of Ambedkar and his team in the Labour Department was the constitution of the Central Waterways, Irrigation and Navigation Commission (CWINC) and the Central Technical Power Board, which were precursors respectively of the present-day Central Water Commission and the Central Electricity Authority. CWINC was set up on April 5, 1945 to act as a strong technical organisation to secure planned utilisation of water resources of the country. It was to be a central fact finding, planning and coordinating organisation with authority to undertake construction work. As an apex engineering organisation in the field of water resource development during the past five decades, CWC has developed considerable expertise in planning, Investigation, design and management of various aspects of water resource development such as irrigation, hydropower generation, flood control and water management.[1]

It goes to the credit of Ambedkar and his Department, that they not only mooted the concept and argued for the necessity of having such a technical body at the Centre but also laid down its objective, organisational structure and programme. The efforts which the Labour Department made to have the concept accepted, the sense of urgency

1 Central Water Commission, New Delhi (1986), *Four Decades of Central Water Commission in the Service of the Nation*, iv-v.

which it brought to the project and the promptness with which it accomplished the task within nine months, have become part of the proud history of the Central Water Commission.

Irrigation planning has a long history in India. Under British rule, however, the first major initiative as regards water resources management was taken by the Military Board, which had charge of irrigation. In 1810, the Board surveyed the state of old canals constructed both on the eastern and western side of river Yamuna. Five years later, a Chief Engineer was appointed to look after and to expedite the restoration work. In 1830, an additional office of General Superintendent of Irrigation at Delhi was created.

When the Military Board was reorganised in December 1830, a Canal and Embankment Department was created, which later became one of the five Departments under the administrative control of the Board. Business connected with irrigation in the erstwhile Princely States, however, remained under charge of the Foreign Department.

The Military Board was abolished in April 1855. Three months earlier, a new public Works Department had come into being, which took over the functions pertaining to irrigation. Under the Military Board, irrigation works were financed mostly from general revenues. When irrigation came under the Public Works Department, a separate fund for irrigation work was set up. The measure proved beneficial and various canal projects were successfully executed by the Government. To give further momentum to irrigation projects, a separate Irrigation Branch was created in the Public Works Department on New Year day, 1867. This was to be headed by an Inspector General of Irrigation Work, who was to supervise all irrigation works in the country. At this time, irrigation works were divided into two categories: Minor works, which were

undertaken mostly to protect existing cultivation and revenue, continued to be financed out of general funds. Major works, on the other hand, were henceforth financed by raising public loans. In 1880, the post of Chief Engineer, Irrigation which had been created in 1815, was abolished as a cost cutting measure, but the post of Inspector General remained.

Electricity became important for the country's economy from the latter half of the nineteenth century. Electricity was introduced in a practical way in 1881 in Howrah Jute Mills Company, Calcutta. On July 1, 1887, the Government of India passed the Indian Electricity Act, which provided "protection of person and property and for the prevention of injury to telegraph lines from appliances or apparatus used in the generation of supply and consumption of electricity for lighting and other purpose."

The Public Works Department was reorganised on December 23, 1987, and the Joint Secretary, Civil Works, was required to act as the Inspector-General of Irrigation. In yet another reorganisation on March 1, 1900, works relating to irrigation were placed on a separate list, along with subjects like Roads and Buildings. The power component, however, was under charge of a separate Civil Works (Electricity) Branch of the Public Works Department, commencing in 1899.

The early twentieth century brought about two major developments in respect of water resource management. These were, the setting up of the Central Water and Power Research Station in Pune in 1916 and the introduction of the Government of India Act, 1919, which placed irrigation under the purview of the Provinces. Meanwhile power was brought under charge of the Board of Industries and Munitions which was temporarily constituted on March 1, 1920, and which looked after some of the functions of the Public Works Department. When the

Board was replaced a year later with a new Department of Industries, its Electricity Branch also changed hands.

In 1923, the Departments of Public Works and Industries were abolished, and their functions taken over by the newly created Department of Industries and Labour. The New Department now had charge of irrigation 'Accounts-Irrigation', 'Civil Works-Irrigation' and 'Electricity', as three independent and separate branches. It was considered advisable to associate a technical officer, who was primarily an irrigation expert, with the Department to advise it in place of the Inspector-General of Irrigation. This was done in May 1923, and the post of Consulting Engineer to the Government of India was created.

To consolidate the irrigation works in the country, a Central Irrigation Board of Provincial Engineers (also known as Board of Irrigation or Central Board of Irrigation) was constituted on April 22, 1926, headed by the Consulting Engineer. The primary function of this Board, which started operating from January 1, 1927, was to give independent advice to the Government of India and Local Governments on questions related to irrigation projects that might be referred to it. The Board made an important advance in May 1931, when it constituted a Central Bureau of Information for Irrigation, as a channel for exchange of information between the Chief Engineer and the Research Officers. The Bureau also set up a specialised library on irrigation. Irrigation development, however, came to a virtual standstill when, because of financial constraints, the Government abolished the post of Consulting Engineer in March 1932. The Government of India Act, 1935, confirmed the jurisdiction and control of the Provincial Governments on irrigation, limiting the role of the Central Government only as a referee in any inter Provincial dispute. With the introduction of Provincial Autonomy from April 1, 1937, every

administrative unit in the country undertook separately necessary legislative or administrative measures in respect of waterways passing through its territory. At the Central level, the Department of Industries and Labour was bifurcated into the Department of Labour and Department of Communications on November 8, 1937. Subjects like electricity, irrigation and others related to public works came under the purview of the former. Later, when World War II necessitated all possible efforts for timely supply of power to ordnance factories and warlike industries, a post of Electrical Commissioner was created in 1941 to give momentum to electricity generation.

When Ambedkar took over charge of the labour, irrigation and power portfolio, three main administrative units existed at the Centre to look after the development of irrigation and hydro power of the Provinces and the States. These were the Central Board of Irrigation, Irrigation Advisor in the E.H. & L. Department and Electrical Commissioner.

Development Officer for Irrigation Planning: 1942-46

The structure of these establishments, it was felt, was not adequate to meet the demands for accelerated irrigation and power development as a national concern. The labour Department therefore proposed setting up the Central Waterways, Irrigation and Navigation Commission (and also the Central Technical Power Board) to provide the Centre a more positive and active role in the Provinces' and States' irrigation and electric power development. The roots of this initiative, however, are to be found in the new water policy under the post-war plan.

The Reconstruction Committee of the Council had in its meeting held on January 8, 1944, recommended that 'development officers' should be appointed for various subjects. They were to prepare

an all -India plan for their subject and were to be answerable to an appropriate Department of the Central Government. Discussions were to be held on this plan with a panel of experts from the Ministries concerned and also with competent representatives of Provincial Governments.[2] After amendments in light of these consultations, the plan was to be submitted through the Department to the Policy Committee.

Accordingly, in its meeting held on January 24, 1944, the Labour Department proposed to appoint two development officers, to be known as Consulting Engineers, for irrigation and for hydro-power.[3] The proposal to appoint a Consulting Engineer for Hydro-Power had a smooth sailing. Ambedkar approved it on March 7, 1944 and in November that year, W.L. Voorduin, a Project Officer of the Tennessee Valley Authority in USA, was appointed to the post.

In appointing a Consulting Engineer for Irrigation, however, matters of policy delayed the process. The incumbent was expected to be an expert on gravity irrigation, who could give authoritative advice to the Centre and the Provinces. Some in the Labour Department preferred an engineer from abroad. An officer having experience within India, it was explained, was likely to be biased by his own Provincial experience, whereas an overseas expert would have a wider outlook and possibly new and fresh ideas on the subject.[4]

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2 Reconstruction Committee of Council, "Planning of Post-war Development: Note by Secretary R.C.C.", January 4, 1944, File No. DW-1-1(25) CWINC/47, Labour Department.

3 Reconstruction Committee of Council, "Minutes of the meeting held on January 22, 1944 to discuss the Appointment of Development Officers and Experts," File No. II/B/76/44, Labour Department.

4 "Setting up of the Central Water, Irrigation and Navigation Commission on permanent basis". File No. DW.1-1(25) CWINC/47, p. 16, Labour Department.

Ambedkar, however, expressed a preference for an expert from within the country.[5] The matter was referred to the Central Board of irrigation, which supported Ambedkar's view. By May 1944 it became clear that the Consulting Engineer for Irrigation was to be selected from within the ranks of the Provincial Chief Engineers of India. At this stage, the Labour Department also proposed an additional post of a Consulting Engineer for Waterways.

The proposal to appoint the Consulting Engineer for Irrigation was sent to the Finance Department for approval in May 1944. The relevant note of the Labour Department stated:

> as the selection to this post was to be confined to the country, the Consulting Engineer should be one of the seniormost Provincial Chief Engineers and for all practical purposes function as a Chief Super Engineer on post-war irrigation development. He would be the coordinating authority for long-term irrigation schemes in Provinces and States.... his pay therefore was to be fixed at not less than... that of the Chief Engineer of a Province.[6]

The Finance Department approved the pay scale but questioned the need for the post. There was already an Irrigation Advisor in the E.H. and L. Department at the Centre, it pointed out. This started off an interesting series of exchange of views between the two Departments, which amply brings out the perspective of Ambedkar and his Department on the development of India's water resources. Justifying the need for a separate post of Consulting Engineer, the Labour Department argued that:

> The posts of Consulting Engineer for Irrigation and the Irrigation Advisor are entirely different with different

5 Note by Dr. Ambedkar, dated March 15, 1944, File No. DW-1-1(25) CWINC/47.

6 Note by the Labour Department, dated May 16, 1944, File No. DW-1-1(25) CWINC/47, P.24.

> functions. The Irrigation Advisor is employed for the selection and coordination of emergency irrigation schemes which can be brought into operation during the period of the war and have a definite value for the Grow More Food campaign; these are generally small irrigation projects costing comparatively less and commencing operation soon. On the other hand, the duties of the Consulting Engineer are essentially of post-war character required to plan for the development of irrigation in India during the post-war period to which so much importance is being attached. Information has been called for at the instance of RCC for all over India (including Indian States) for the development of their irrigation in the post-war period. The material collected can however be sifted and the various schemes coordinated only by an expert with technical knowledge and experience. The officer concerned will be required to tour all over the country and to discuss the plans for post war development with representatives of Provinces and the States and to chalk out a line of development....as such....there will be enough work for the officer concerned for a well coordinated and thought out plan.[7]

The distinction was not of posts alone. Much more, it was a distinction between small or minor and major and medium projects, and also between short-term and long-term perspectives of irrigation development. A long-term perspective was needed in planning and development of water resources in the country, the Department argued. The irrigation Advisor was purely a war-time appointment, who concentrated on smaller projects while larger schemes remained neglected. These called for an expert with knowledge of gravity irrigation who would advise Provinces. The Department argued that "it would be a mistake to try and economise on our experts, the key stone in the arch of post-war reconstruction."

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7 ibid., 26

The Finance Department was not convinced. It insisted that the difference between the duties of the two posts was not so fundamental that the Irrigation Advisor could not as well serve as Consulting Engineer. The Labour Department, it said, was perhaps not as familiar with the nature of projects received from Provinces as was the Finance Department, for which the Irrigation Advisor had advised subsidy by the Finance Department. Some of these projects differed from permanent irrigation projects only in the extent of their creativeness.

In its response dated June 26, 1944, the Labour Department reiterated its position. It emphasised that

> enough evidence had been provided to convince the necessity for the post of a Consultant Engineer for Irrigation to act as a post-war development Officer in connection with the irrigation, water supply and drainage schemes to be undertaken after the war on an all India basis. There was an essential difference between the nature of duties of the Irrigation Advisor and the proposed Consultant Engineer. While the former was required to plan for small short-term emergency irrigation projects with a view to grow more food in the country during the war, the latter would plan for coordinated and well thought out schemes for the development of irrigation in the country on long-term and on an all India basis.

The Department also stated that it had already collected a large mass of material on post-war schemes proposed by the Provincial Governments. The planning involved, it said, would require extreme hard work and there was enough to keep the office fully busy.

To drive home the need for a Consulting Engineer, the Department said that the incumbent would need to undertake an all-India tour including the Indian States. Although the projects would be

prepared by the Provinces and States, before a coordinated plan on a regional basis could be drawn, many preliminaries would have be settled. These would include negotiations with the parties involved and scrutiny of the designs and estimates. It would not be possible for the Irrigation Advisor to give close attention to the planning of both the post-war irrigation schemes and Grow More Food Schemes. The additional Post was an absolute essential, it stressed.[8]

From Consulting Engineers to CWINC

After sending off this reply, however, the thinking in the Labour Department underwent a dramatic change. In early September 1944, the Department suggested that the proposed Consulting Engineer, rather than being a merely additional post in the Department, should head a newly proposed scheme to set up a Central Irrigation and Waterways Advisory Board. The other members in this ambitious scheme would be some technical experts attached to the various divisions of the Department. If the proposal was accepted, there would be no need to have two Consulting Engineers, one each for irrigation and waterways.

The new proposal, however, bristled with some difficulties. There were already two bodies in-charge of irrigation development in the country, namely the Central Board of Irrigation, and the Irrigation Advisor with E.H. and L. Department. The Consulting Engineers for Irrigation and Waterways, a cause which the Department had until then espoused, would be in addition to these. The Department had to explain why these bodies were inadequate to carry on irrigation development as part of post-war reconstruction.

The labour Department had already done its home-work on this sticky point. It explained that it

8 Note by the Labour Department, dated July 27, 1944, ibid., 28.

was essentially looking for a strong technical expert body at the Centre to give competent advice to the Provinces and States on all aspects of water resource development. The Central Board of Irrigation could not fulfil this role. A look at clauses 19-26 of its constitution made it clear that it suffered from four main defects:

a) Except for the purely statistical side of its work, it functioned only through sub-committees. This method was cumbersome and time-consuming.

b) Members of the sub-committees, functioning only part time, could not give sufficient time to problems.

c) Generally, members of the sub-committees would suffer from a Provincial outlook.

d) The Board was unable to influence the policy of Provinces and States. It was not in constant session. As it worked through its periodical meetings its opinion could not be quickly secured and it had no continuing influence.

The competence of the office of the Irrigation Advisor in E.H. and L. Department then came in for analysis. This office, the Labour Department said, was primarily concerned with pump irrigation and pump-dewatering (i.e. mechanical irrigation and pumping). It was a wartime appointment with a wartime outlook; its main work was to plan for short-term, wartime emergency irrigation projects under the Grow More Food campaign. It did not have the technical expertise to advise on permanent projects or schemes.

The labour Department conceded that it had second thoughts on having two Consulting Engineers, one each for waterways and irrigation. Careful consideration, it said, showed the proposal to be an unsound alternative. Most of the schemes under consideration, such as Sone and Damodar,

were multipurpose schemes, involving power, flood control, navigation and irrigation. If there were two Consulting Engineers, the schemes would have to be referred to both and they might give conflicting advice.

In the light of these limitations, the Department suggested, it would be preferable to create a body at the Centre, to be called the Irrigation and Waterways Advisory Board, headed by the Waterways and Irrigation Commissioner to the Government of India. He would have experience of the Indian situation and knowledge both of waterways and irrigation, including gravity irrigation. There would be three members one each of irrigation, waterways and hydro-electric power. The general responsibility of the Board was to initiate, coordinate and put forward schemes of rivers and waterways control (See Appendix IV.1). Ambedkar approved the proposal on September 9, 1944, but noted at the same time "whether it would not cause considerable delay if we were to consult the Provinces now. Can we not consult them at a later stage?"[9] (Appendix IV.2).

In submitting the proposal to the Finance Department, two issues were mainly involved, namely (a) the *size* and *duration* of the financial support from the Centre, and (b) whether the Commission would charge fees from the Provinces and States for technical and expert advice on their projects. The labour Department had made out a case for substantial and continuous support from the Centre. It suggested that:

> It will be noticed from the enumeration of the functions of the Board that they would be concerned a good deal with initiation of projects in the early years of their life. It will be impossible for them to initiate any forward policy in irrigation and waterways control

9 Note by Dr. B.R. Ambedkar, File No. DW-1-1 (25) CWINC/4, p. 32, Labour Department.

> measures if they have to depend for this purpose entirely on Provincial resources. The Board must not only have necessary staff to prepare schemes and to work out their details, but must have funds to do so. It is, therefore, essential that the Board must have from the very beginning a secured source of income of their own....
>
> It is essential that the Centre should take over such responsibility it can in respect of waterways control. The problems are immense and there must be an all India body with sufficient weight to be able to give an opinion with conviction which Provinces will respect and accept....Except a few cases (i.e. the schemes exclusively handled by the Provinces) the advice given by the Board should be free...The problems are of all India importance. Who could say that the problems of the Ganges, of the Brahmaputra, of the Indus are problems of Provincial importance? Even if a narrow view is taken of the actual irrigation opportunity, the crying need of India as a whole to ensure that her waterways are used to the best advantages makes it necessary for the Centre to make every effort possible to ensure that the best available advice is available-looking at the matter not only from a Provincial angle but from a national angle. That cannot be secured if we ask the Provinces to pay.[10]

The response of the Finance Department, however, was not quite encouraging. The problems of waterways were the responsibility of the Provinces concerned, it argued. It could not ignore the fact that the division of revenues between the Centre and the Provinces was on the basis *inter alia*, that waterways were the sole responsibility of the Provinces. Viewed thus, the proposal of the Labour Department constituted an incursion into the Provincial field, it said. Such incursions would be agreeable only if they were temporary and their financial effects were

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10 Note by the Labour Department, September 25, 1944 File No. DW.1-1(25) CWINC/47, P. 36, Labour Department.

known and limited. The Finance Department would agree to support the proposed Irrigation and Advisory Board with full time staff and Central liability for five years; within that period finance other than through Central revenues would have to be arranged.

The labour Department responded that such an approach was misconceived. Backed by Ambedkar's knowledge of constitutional law, it argued that the Constitution did not impose on the Centre so rigid a restriction. It stated:

> The Constitution (of 1935) lays down (vide Section 150 and section (2) of the Constitution) that the federation may grant for any purpose (provided that the expenditure is for the purposes of India or some part of India) notwithstanding that the purpose is not one with respect to which the federal legislature may make laws. The fact that the Provincial legislature is, under the present Constitution the only Authority that can make laws governing waterways and irrigation, is therefore no ground for arguing that under the Constitution it was decided that all expenditure in connection with waterways should be borne by Provincial revenues. It seems abundantly clear why the Constitution made the provision in section 150(2). It is impossible to evaluate exactly or even approximately what the benefits of particular operation may be to the Centre, the Provinces or the individual. It is impossible in the case of waterways to evaluate exactly what benefit is going to accrue to Provincial and Federal revenues from a scheme controlling the waters or rivers and providing either for hydro-electric power, irrigation, navigation, flood and for that matter trade, commerce and industry. It is probably because of difficulties associated with the general benefits accruing from any of the irrigation, waterways or hydro-electrical power projects that the Constitution allowed the Centre

to make grants and a share in revenues on the matter falling within the Provincial Jurisdiction.[11]

The alleged constitutional ground was, therefore, wrong, the Labour Department said; and since the expenditure on the establishment of the Irrigation and Waterways Advisory Board for water resource development was for the purpose of India or some part of India, it clearly fell under the provision of Section 150(2) of the Constitution. Hence the Centre had to take full financial responsibility of the project. Further, on a general plane, if the position as set out by the Finance Department was accepted, it would have torpedoed all post-war development that called for coordination between the Centre and the Provinces. There was no reason in the Constitution Act or otherwise to restrict assistance to the maximum period of five years only. The object of the board was important and the Centre itself stood to benefit from making the Board a permanent organisation.

With these forceful arguments, the Finance Department was finally persuaded to agree, in principle, to give financial support to the Board permanently. But before this was done, it wanted the Provinces also to be consulted on the proposal.

Accordingly, between November 15 and December 7, 1944 the Labour Department went about preparing the letter to the Provinces and the draft of the proposed Board. The draft was discussed and approved in an inter-departmental meeting held on November 22, where it was decided to name the proposed organisation as the Central Waterways, Navigation and Irrigation Commission. [12] An alternative suggested name, that is the Central

11 Note by Labour Department, 4.10.1944. File No. DW.1-1(25) CWINC/47, p.39, Labour Department.

12 Minutes of the Meeting held on November 22, 1944 U.O. No. W II/IR 9/1099/1944, Labour Department.

Navigation and Irrigation Commission was not favoured. The intention after all, was to get all Provinces to agree to the proposed structure. If it restricted itself to navigation and irrigation, the Punjab and the U.P. might see no material use to them from it, since navigation possibilities on their rivers were very limited, while their waterways problems were large. Besides, while the term "waterways problems" would include all navigation problems, in the Indian context "navigation problems", might not include all waterways problems.[13]

Ambedkar approved the draft on the proposed Central Waterways, Irrigation and Navigation Commission and the letter to the Provinces on December 7, 1944. These were sent to the Provinces the next day (See Appendix II.4). In the letter, the labour Department explained that post-war development was a vital matter before the Governments of the country. The broadening of the electrical industry and the development of hydro-electric power were inextricably connected with development of industries and food production. Expansion of irrigation, conservation of soil and control of floods had a direct bearing on food supply and people's general content and prosperity. Navigation would also play an important part in alleviating transport difficulties.

Explaining the need for the proposed Commission the letter said that for any waterways, matters such as irrigation, river control, conservation, control of flood water, hydro-electric development, soil conservation, tidal problems and navigation often concerned more than one Province or State. If one State or Province took action without regard to the interests of its neighbouring Provinces or States, the results would not be in the best interests of all. To

13 File No. DW-1-(25) CWINC/47, p. 43

make the fullest and most economic use of waterways, a Central technical authority would be a better alternative. The expert body would be capable of advising both the Government of India and, when so required, the Provinces in regard to waterways, navigation and irrigation problems, and able, in so far as Provincial autonomy permitted, to secure a measure of coordination throughout the country. It noted:

> Increased attention is being paid (in this country to large waterways), to the management of individual waterways as a whole, to the coordination of waterways policy as between Provinces, and to the discussion and if possible settlement of principles governing rights in water and to the preparation of hydrological data and other statistical information on uniform lines. These are all matters on which a technically strong advisory body at the Centre can, in the opinion of Central Government, perform useful functions, while it would also seem that such a body might on occasion as required be able to give useful advice to Provinces on technical matters, to help in the settlement by agreement of any dispute that might arise, and to advise on the terms of any agreement under consideration between Provinces to ensure that they are clear and unequivocal. The Government of India feel that it is advisable that they should set up a Central Waterways, Irrigation and Navigation Commission with certain specific duties.

Many of the problems which came within the purview of the Commission, the Department noted, were within the Provincial legislative and executive sphere. There was no intention whatever to usurp or in anyway encroach upon these. The Commission was purely a fact-finding and advisory body, composed of expert members with competent and sufficient staff able to devote themselves whole-time to the study of India's waterways and irrigation problems. It would coordinate information and would

be available to study and help in treating waterways problems as a whole and to analyse them when required. The Governments were expected to give their view on the proposal by December 20, 1994.

The response was overwhelmingly positive, with nine out of the eleven Provinces and most of the States backing it wholeheartedly. The only Provinces to express some reservation were Madras and Bengal.

The Madras Government accepted the proposal in principle. It contended, however, that the Central Board of Irrigation could carry out the proposed functions if the consultant for irrigation and waterways was made its member. In response, the Labour Department explained why it was better to have two separate bodies to attend to these separate functions. In fact, the Department said, there was additional room and necessity for organisations like the Central Waterways, Irrigation and Navigation Commission in the future of India if headway was to be made in the country's waterways, irrigation and navigation problems.

The dissent of Bengal was more fundamental. It argued that (a) the executive and administrative functions that would be vested in the proposed Commission would infringe on Provincial autonomy; (b) the Commission should merely be an advisory body; and (c) an alternative arrangement in the form of Regional Authorities and Inter-Provincial Commission should be considered. In answer, the Labour Department referred to its letter to the Provinces, where it had been made abundantly clear that there was "no intention that the Commission should usurp or in any way encroach upon the duties and responsibilities of Provinces." As regards making the Commission an advisory body, it argued that without the proposed functions, the Commission would be virtually ineffective.

As to the Regional Authorities and Inter-Provincial Commission proposed by Bengal, they would be almost local (as against all-India) bodies. If the proposal about setting up such Regional Authorities to control the various systems had materialised, there would have been several such authorities in the country. The functions proposed for the CWINC were quite different from those of "river commissions". The *ad hoc* organisations preferred by the Bengal Government were by no means ruled out by the proposal for a Central Commission; indeed it was perfectly available to the Bengal Government and in many cases it could be taken up within the framework of the proposed Commission. The formation of such Regional Authorities, where necessary, in consultation with the Provincial Government concerned would also be the proposed Commission's responsibility.[14]

CWINC Established

Since the large majority of Provinces and States had agreed to the proposal, the Labour Department now had the green signal to form the Commission. To give final touches to the proposal, the Department sought the help of Rai Bahadur A.N. Khosla, the newly appointed Consulting Engineer for Irrigation with an understanding that he would subsequently take over as Chairman of the proposed body. Between February 2 and March 3, 1945 the Labour Department, particularly its Secretary H.C. Prior, Deputy Secretary D. Mazumdar and Rai Bahadur Khosla worked hard to prepare the Draft Resolution (See Appendix IV.3). Ambedkar approved the Draft Resolution on March 3 and its summary on April 4. The same day, the Viceroy approved the resolution was notified the following day. The Resolution read:

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14 Note by Labour Department, 12.2.1945, File No. DW.1-1 (25)/47, pp. 47-8.

> The Commission will act as a central fact finding, planning and coordinating organisation. It will be available to advise the Central, Provincial and State Governments in regard to Waterways, Irrigation and Navigation problems throughout the country. The Commission will be a strong technical organisation designed to conduct, where necessary, surveys and investigation with a view to secure planned utilisation of the water resources of the country as a whole and, in consultation with the Provincial and State Governments throughout the country, to coordinate and press forward schemes for conservation, control and regulation of water and waterways.[15]

The Commission, when fully constituted, was to consist of a Chairman, two full-time members and some part-time members as found necessary. The latter would include experts in hydro-electricity, mechanical irrigation and soil conservation. The Chairman and members, both full-time and part-time, were to be technically competent.

Rai Bahadur Khosla, in consultation with Secretary Prior and Deputy Secretary D.L. Mazumdar, then went about preparing the organisational framework of the Commission. Referring to the necessity of adequate staff and the size of the organisation, the Labour Department argued:

> it must be remembered that we are beginning almost from scratch in regard to all-India planning for the development of Irrigation, Waterways and Navigation. Sporadic local enquiries and investigations in these matters have been made from time to time and such local planning as has been undertaken in the past has been concerned exclusively with the local issues. This is the first time in the recent history of this country.... that we are beginning to consider planning of such fundamental subjects as water, power, mineral resources etc. on a comprehensive all-India scale and

15 Department of Labour, Resolution No.DW-10(2), April 5,1945.

> against an all-India background. Viewed in this light the Finance Department must accept in principle the expansion of the proposed organisation to its ultimate stage, when it considers according sanction to the layOut proposed for stage I. In other words, the Finance Department must be seized of the magnitude of the responsibility entrusted to CWINC from the very beginning and hence, should be prepared to face the inevitable expansion of the Planning Organisation.[16]

The Commission was to have six branches namely, Irrigation, Navigation, Waterways, Hydrology, Designs and Statistics and Publications. Each branch was to be headed by a Director, assisted by a Deputy Director, Assistant Director, Technical Assistants, Supervisor, clerical and other staff (See Appendix IV.4). The Chairman and the full-time Members at the top were to form the Directorate of the Commission.

Ambedkar approved the proposed organisational structure on August 8, 1945, and the Standing Finance Committee approved it in September 1945, but not as a permanent body. Rai Bahadur Khosla subsequently submitted the proposal to the Government to make the CWINC a permanent body with effect from the date of its establishment (See Appendix IV.5). In his proposal, the Chairman argued:

> The CWINC was originally set up as a planning and advisory body. It was latter declared to expand its function to include a fairly equipped Design Branch. More recently it has been decided to entrust to the Commission the responsibility for the construction of certain major projects... The work of advising and planning which forms the primary responsibility of the Commission must be continued over a long period of

16 Note by the labour Department, August 4, 1945. File No. DW 1-1(25/CWINC), pp.16-17.18. Office Order, Deputy Secretary, Ministry of Works, Mines and Power dated October 14, 1947. File No. DW 1-1(25) CWINC. pp. 157-8.

> time if it is to be productive of good and lasting result. The problems of river valley development which CWINC is being called upon to tackle are so many, the field is so vast, and the repercussions of such development on the agriculture, industry, standard of living of the masses, national wealth and economy and national defence are so vital that it would be suicidal to put a time limit to the life of the organisation. This fact was fully recognised by the concerned Honourable Members at the time the CWINC was setup, but the progress that has been made since in the preparation and furtherance of the many schemes of river valley development, the increasing number of requests from the Provinces and States for advice on the various aspects of their projects....and the growing importance of the Commission in respect of water rights and inter Provincial agreements.... emphasise the necessity of putting the CWINC on a permanent basis. The delegation of additional functions in respect of designs and the undertaking of construction of major river development projects, makes such necessity imperative...
>
> Water constitutes the basic wealth of the country. From water will come irrigation and food production, cheap power and industrial development, cheap transport facilities by navigation, fish culture producing protective foods for the masses and opportunity for employment. From these, revenues will accrue to the State in ever increasing measures, which could be used in education, public health and other essential nation building activities. Water is thus the basic tool with which to build up the wealth and well-being of the nation. Its proper control, conservation and utilisation should, therefore, be the first and foremost concern of a national Government.

For the fulfillment of this task the services of the best experts were necessary and the only way to attract talent and keep it was to assure to them continuity of work and security of service. Besides, long-term projects of 20 to 30 years duration also demanded continuity in the planning, design and

construction branches of the Commission. Both these requirements could be full filled only by making CWINC a permanent body.

Persuaded by Rai Bahadur Khosla's arguments, the Government made the office of the Central Waterways, Irrigation and Navigation Commission a permanent organisation with effect from its establishment date of April 14, 1945.[17] (Appendix IV.6)

In May 1945, while arguing for a suitable size for the organisation, it was said prophetically:

> I visualise that the Growth of this body in course of time, into a very big organisation with its activities spread over the entire length and breadth of India and its assistance and advice eagerly sought by all Provinces and States, to the end that the natural resources of any region may be exploited for maximum benefit and unified development.

Indeed, since its establishment in April 1945, the Commission has expanded significantly in several directions. From a modest beginning of 205 staff members, it has since grown into a large organisation, 7,000 strong. As the apex organisation in the field of water resources development for nearly five decades, the Central Water Commission has been closely associated with planning, investigation, designs and management of various aspects of water resource development including irrigation, hydro-power generation, flood control and water management. The expertise developed during this period under one roof has made the country self-reliant in water resources management.[18] By the middle of the 1980s, the organisation had carried out detailed surveys and investigations of as many as 164

17 Draft Resolution for the Constitution of the Central Waterways, Irrigation and Navigation Commission, File No. DW.1-1(25) CWINC, 147, p. 56.

18 M.A. Chitale (1986), op. cit., iv.

projects and had been associated in the design of 100 projects. Further, all the major and medium irrigation and hydro-power projects formulated by the States were examined in the Central Water Commission before approval by the Planning Commission.

The activities of the Commission are manifold. More notable among these are: providing consultancy services to all State Governments as well as to other Central Departments in the fields of irrigation, water supply, flood control and hydro-power generation; detailing out the technical provisions of projects proposed for external assistance; monitoring the progress of selected 67 major projects throughout the country; collecting and compiling hydrological data at about 500 key stations throughout the country; and flood forecasting on all inter-State flood prone rivers through its 145 flood forecasting stations. Keeping in line with modern technological advances, it has added new units dealing with Irrigation Research and Management, System Engineering. Basin Planning and Management, Flood Control, Remote Sensing, Environmental Monitoring and Dam Safety. The Commission has the largest and one of the best technical libraries in the whole of Asia.[19]

While addressing the first Conference on Damodar, Valley Scheme (Calcutta January 3, 1944), Ambedkar had observed:

> the objects which have led to the setting up of two organisations…viz. Central Technical Power Board and Central Waterways Irrigation and Navigation Commission.....are to advise on how the water resources can be best utilised and how a project can be made to serve purposes other than irrigation….I hope we shall be guided by the right spirit, leaving aside all sectional point of view, and proceed to open a

19 Ibid., iv-v.

way to the inauguration of a new policy in regard to our waterways and lay the foundation for a regime of prosperity of the poverty stricken millions of this country.[20]

In the establishment of the Central Waterways, Irrigation and Navigation Commission on April 5, 1945, Ambedkar and his Department laid down the foundation for a new water policy on the eve of independence, preparing the ground for the prosperity of the emergent nation.

Note:

This section is largely based on the excellent summary prepared by National Archives (1987), *Guide to the Sources of Asian History India, 3.1*. Delhi: National Archives of India.

20 B.R. Ambedkar (1945), "Damodar Valley Scheme Calcutta Conference", January 3, 1945, *Indian Information*, February 1945, pp.97-109.

CHAPTER V

DAMODAR VALLEY PROJECT

The water policy which had evolved under Ambedkar's direction as part of the post-war economic plan was on all accounts, a far-seeing framework and a multidimensional achievement. To begin with, it led to the creation of an administrative and technical organisation at the Centre, namely the Central Waterways, Irrigation and Navigation Commission and the Central Technical Power Board. At the same time, it was accepted on all hands that the best way of developing inter-State rivers was the adoption of the concepts of multipurpose reservoirs and River Valley Authority. The present chapter deals with a third achievement of the Labour Department under Ambedkar, and that is the beginning of some of the important present-day river valley projects in the country.

The river valley projects which were under the active consideration of the Labour Department during 1944-46 were the Damodar River Valley projects, the Sone River Valley projects, the projects on Orissa rivers including the Mahanadi and the Kosi and others on rivers Chambal and rivers of the Deccan. These projects were conceived essentially for multipurpose development with flood control, irrigation, navigation, domestic water supply, hydro power and other purposes. The Labour Department was also required to assist the States in their small storage or retardation dams in the States in their small storage or retardation dams in the States of Baroda, Jaipur, Kathiawar, Cutch, Nawanagar, Bundi, Aundh, and Morvi for conservation and control of flood water.[1] The CWINC in cooperation

1 Organisation of the Central Waterways, irrigation and Navigation Commission. A draft, August 8, 1945. File No. DW 1-1(25) CWINC/47, Labour Department.

with CTPB was required to make special reconnaissance surveys for possibilities of irrigation and other purposes in the various regions to decide on which schemes should come first on the basis of productivity, quick results or protective value and then take up detailed investigations of schemes which it proposed to implement. The multipurpose projects which were initiated during 1943-46 were the Damodar, the Mahanadi, the Sone and Kosi. While substantial work relating to the Damodar River Valley project was completed during 1943-47, a beginning was made with others and progress in various magnitudes achieved.

Ambedkar was instrumental in ushering in the coordinated development of the Damodar basin by the Central Government. As a member in the pre-independence Cabinet he pursued vigorously the development proposal for Damodar Valley. He directed that its development should be on the lines of Tennessee Valley Authority and supervised a great deal of the preliminary work, With this kind of ground work , the Damodar Valley scheme became the first river valley development scheme in post-independence India, with the Damodar Valley Corporation getting established by an Act of Parliament.

A Problem River

The river Damodar rises in West Bihar at approximately 2,000 feet above sea level and after flowing generally in a south-easterly direction for 540 km (240 km in Bihar and 250 km in West Bengal) joins the river Hooghly about 50 km below Calcutta. Its principal tributary, the Barakar, joins it before it leaves Bihar. The catchment area of the river is about 22,000 sq. km., of which about 19,000 sq. km. are in the uplands and 3,000 sq.km. in the plains. In its upper reaches in Bihar, the Damodar flows rapidly through rugged country eroding land and collecting silt. As it enters West Bengal it deposits its

silt along its banks and flows leisurely to merge with the Hooghly. It is a seasonal river. During the rains, its flow is torrential; and in the hot weather, barely a trickle. Its destructive propensities have earned the Damodar the sobriquet of "the river of sorrows". It erodes Bihar and floods Bengal, with water and with sand, and causes much distress and loss in both States.

The challenge of taming the Damodar seems to have engaged attention for some considerable time before the fiftieth decade of this century. Early in the eighteenth century, embankments were built on both the banks from Silna to the mouth of the river, to protect the adjoining areas from floods. But these proving unequal to the fury of the river, a palliative was decided in 1855: 30 km of the right embankment would be removed to allow the river to spill on the right bank. This would relieve pressure on the left bank, which protected vital interests like the East Indian Railway, the Grand Trunk Road and the port of Calcutta. Accordingly, between 1856 and 1859, 30 km of the right embankment were removed. Another 16 km of the stretch were abandoned thirty years later.

In 1863, the Government of India investigated the possibility of flood control by means of reservoirs in the upper reaches of the river. The engineers recommended construction of controlling reservoirs at four sites on certain tributaries. But greater protection was desired than this measure would provide. A supplementary survey was therefore carried out in 1866 and some more sites on the Damodar and the Barakar were selected for detention reservoirs which, apart from controlling the floods, would also provide irrigation and navigation facilities. In 1870, a tentative scheme on these lines was submitted to the Secretary of State for India. That dignitary, however, declined to entertain the

proposal since he considered the financial risk involved to be disproportionate.

The disastrous flood of 1900 again brought the matter to the fore, and a scheme for the construction of three masonry dams at a cost of Rs. 60 lakhs was drawn up. The emphasis was on irrigation, but the investment of Rs. 110 per acre of reclaimed and benefited land was considered extravagant. It was therefore decided to take ad hoc measures from time to time to repair the damage and alleviate the distress caused by the floods. The subsequently high floods of 1907, 1909 and 1911 were apparently dealt with in this *ad hoc* fashion.

The flood of 1913 once again brought matters to a head. With a peak discharge of 6.5 lakh cusecs, the flood caused wide breaches in the embankment and serious damage to the countryside, which roused considerable public outcry and demands for a revision of policy. Controlling reservoirs on the Damodar and the Barakar were again considered to be the only effective solution to the problem. In 1920 a revised scheme for the construction of retentive basins was prepared but was shelved, again on financial grounds. In 1932, the Anderson Weir was constructed at Rhondia. Seven years later, the Bengal Legislative Assembly approved of the Damodar Hooghly flushing and irrigation scheme, but it was not pursued.[2]

A moderate flood–about half the size of the 1913 phenomenon–breached the left embankment in July 1943. The consequences this time were the worst the Damodar region had ever witnessed. The adjoining area was submerged to a depth of six to seven feet. Many villages were devastated. The railway lines were dangerously breached, necessitating diversion of traffic. Calcutta was isolated from the rest of India

2 Report of the Damodar valley enquiry committee: 1952-53, Government of India (1953), New Delhi.

and normal life was hopelessly dislocated. All communications, road and rail, were severed between General Headquarters and the 14th Army for some weeks, throwing out of gear defence arrangements during a critical period of the Second World War. The principal strategic lines of communication of the Burma army were so seriously interrupted that they were almost suspended for a period of three months – this at a time so critical to the war effort that adverse consequences might well have been decisive.[3]

With this shock treatment given by the Damodar, the Central Government finally realised that it could not dilly-dally any longer. A small Technical Committee was immediately set up to advise what action should be taken to obviate a recurrence of the catastrophe at least during the pendency of the war. The recommendations of this committee were promptly accepted and implemented. In Bengal one of the first to draw public attention to it and insist on a comprehensive solution was the eminent scientists, Dr Meghnad Saha.[4] The Bengal Government reacted by appointing a much larger, more representative committee known as the Damodar Flood Enquiry Committee in 1944, under the chairmanship of the Maharajadhiraj of Burdwan with Dr Saha as one of the members. The Committe's brief was to advise on permanent measures to control floods in the Damodar and, in particular, to consider the utility of the scheme of 1920, which had proposed constituting flood regulating reservoirs.

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3 *Amrita Bazar Patrika*, August 1943.

4 See M.N. Saha, "The Damodar, Bengal's River of Sorrow," *Amrita Bazar Patrika*, August 16-17, 1943, SK Basu, "The Damodar, Bengal's river of sorrow", Comments, *Amrita Bazar Patrika*, August 22, 1943.

Bengal Committee's Approach

The Damodar Flood Enquiry Committee (also known as the Bengal Committee) examined the issue in detail and recommended construction of storage dams on the Damodar and its tributaries. The benefits would be, besides flood control, water conservation for irrigation. To prevent soil erosion, it recommended a flushing scheme, afforestation and other measures. The Committee also recommended that in addition to flood control, storage capacities might be erected for generation of hydro-electric power and irrigation. Though the project proposal was of multipurpose nature, the accent was on flood control, every other potential benefit being considered by the Committee as no more than delectable by-products.

The Government of Bengal accepted the Committee's report and appointed a Superintending Engineer to carry out further investigation and work out detailed measures. In August 1944, it also forwarded a copy of the report to the Government of India for consideration. E.G. Casey, the Governor, followed it up with a letter to the Viceroy dated 7th September 1944, in which he suggested that the water problem of Bengal should be comprehensively studied before it could be solved. He noted that Bengal was essentially a water Province, cut through and through by two of the mightiest river systems of India the Ganga and the Brahmaputra, each with discharges of astronomical proportions in the monsoon period. Yet this gigantic problem had never been properly tackled. The whole subject needed to be surveyed by high level experts in the various branches of irrigation, drainage and river control, he said, and suggested that "a really high level man or men from, say, the United States" should be obtained. The United States were specially mentioned because the main progress in the

engineering of river control schemes appeared to have been made there in the development of the Tennessee Valley Project.

In one of its recommendations (No. XIII), the Bengal Committee had stated: "During the course of discussion it was felt by the Committee that it will be an advantage in the solution of flood control and soil conservation problems if forests and rivers of India are made the concern of the Central Government." The Labour Department studied both the extent to which the Central Government could participate and associate with the Provinces in the development of water resources in inter-State rivers and the measures recommended by the Bengal Committee. Since under the Constitution Act of 1935, the Central Government could not assume control over the scheme, the solution was to form a Corporation as an independent executive authority under the Central Government, with the Governments of Bihar and Bengal as partners. Under such an arrangement, the Central Government could finance the project. The scheme was to be treated as a multipurpose project involving flood control, hydro-electric power, and steam power plant in the coal field, navigation and prevention of erosion rather than a single-purpose project meant for flood control alone. Ambedkar approved this approach on September 18, 1944. [5]

In its reply to the Government of Bengal dated October 8, 1944, the Labour Department pointed out that for solving the problem of the Damodar the Committee's report could not by itself serve as the basis. Many relevant issues it had touched only incidentally. The hydro-electric and irrigation aspects, for example, the Committee did touch upon,

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5 Damodar Flood Enquiry Committee - preparation of a Preliminary Memorandum, File No. DW-105 (1) 45/DW1, PP. 3-7, Labour Department

but its principal recommendations were conceived primarily as a flood control measure within the limits of the Province of Bengal. In the interest of the coordinated economic development of the entire Damodar valley, the Government of Bihar also had to be involved.[6] The aspects to be considered were:

(a) supply of water to meet the requirements of the coal fields for steam power or the industry situated there;

(b) hydro-electric possibilities (to be considered in relation to the Bihar thermal grid scheme and perhaps also the Rihand scheme in the Sone Valley in Western Bihar and East (U.P.);

(c) Irrigation aspects of the scheme and possibilities of assistance to agricultural development;

(d) Navigation aspects- though it was doubtful if much could be done in this regard;

(e) future of the port of Calcutta;

(f) The rise in land values, resulting from (b), (c) and (d) above;

(g) Prevention of erosion and deforestation and possibilities of afforestation.

The quickest and most efficient way of attending to these issues was through the agency of a properly constituted Authority on which the Central Government and the Government of Bengal and Bihar were adequately represented. It was suggested, as a preliminary step that an ad hoc committee be set up to examine certain details of the scheme, its report submitted to the Provincial Governments, the Central Technical Power Board and the Central Waterways and Irrigation Board for their views, and

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6 A letter by Secretary, Labour Department, dated October 8, 1944 to the Secretary to the Government of Bengal, Calcutta, File No. WI/IR9/885/44.

further action coordinated in mutual consultation or in a meeting of all the parties. The Bengal Government welcomed the suggestion to establish the Authority. In fact, it said, the Government of India could set up such Regional Authorities for all large rivers flowing through other Provinces and having an outlet in Bengal.[7]

First Calcutta Conference: January 1945

The meeting to discuss the Damodar Valley proposal was held on January 3, 1945 with the Central Government and the Governments of Bengal, Bihar and the Central Provinces as participants. The basis of the discussion was a note circulated by the Central Government about (a) the possibility of exploiting Damodar for multipurpose use, and (b) the procedure and method for collection of hydrological and other connected data, and their scrutiny. Technical experts from the Central Government would then prepare a Preliminary Memorandum setting out the prospects for a coordinated scheme for multipurpose development of Damodar valley.[8]

On both issues, Ambedkar provided a lead in the Conference. He mentioned that

> It is not far from the truth to say that so far there has been an absence of a positive all-India policy for the development of waterways. And there has not been enough realisation that our policy for waterways must be multipurpose policy as to include provision for irrigation, electrification and navigation.

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7 Letter by Secretary to Government of Bengal to the Secretary, Department of Labour; Subject: Damodar Flood Enquiry Committee's Report-Solution of the problems of the entire Damodar Valley, dated November 1944, File No. WI/IR9/ 1069/45, Labour Department.

8 Proceeding of a conference relating to waterways development in Damodar basin held at Calcutta, January 3, 1945 file no. DW-105(1)/45/DW II, Labour Department.

The Government of India, he said, wished to evolve a policy which would utilise the water resources of the country to the best advantage of everybody. The Tennessee Valley Scheme in the USA was a model to follow, which would become possible if the Provinces offered their cooperation and agreed to override the Provincial barrier which had held up their progress and prosperity. The Damodar River would be the first along this line.[9]
He said:

> The issue before us is whether we should be content with damming the river for purpose of stopping the flood only or whether we should make it a multipurpose project so as to cover generation of electricity and supply of water for irrigation and navigation also and that it is to have the object of not only preventing flood in Damodar river but also the object of irrigation, navigation and the production of electricity.

Ambedkar agreed that there was a constitutional problem and its revision of treating waterways on the same footing as the railway was no doubt a welcome change but they did not have to wait till such constitutional change came into being. The river valley authority more or less modelled on Tennessee Valley Authority would overcome the problem. It would be a cooperative undertaking in which the Centre and the Provinces of Bihar and Bengal would be partners. The Government of India was anxious to give shape to the project and was anxious that no time was lost. If the Provinces showed the will to cooperate in joint project for utilisation of water resources, the difficulties created by the Constitution would not stand in their way. And something on the

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9 B.R. Ambedkar (1945), "Damodar valley scheme, Calcutta conference, address to the first Calcutta conference on Damodar valley scheme, *Indian Information*, February 1, 1945, pp. 97-101 and 109.

line of the Tennessee Valley Corporation could be built in India if the Provinces offered their cooperation and agreed to override the Provincial barrier which had held up so much of their progress and the prosperity. He urged the delegates to be guided by the right spirit, leaving aside all sectional points of view and proceed to the business with a determination to agree upon the best solution and open the way to the inauguration of a new policy in regard to India's waterways and lay the foundation for a regime of prosperity for the poverty stricken millions of the country.[10]

The original proposal of the Bengal Government on the Damodar River focused on flood control measures, though it appreciated the importance of a multipurpose scheme. The Bihar Government, on the other hand fully associated itself with the view of the Central Government. Flood control did not attract it but irrigation and hydroelectric power did. In the end, the Conference agreed on two main points. The first was to have a coordinated scheme for the multipurpose development of Damodar River, with flood control as priority. The second was to undertake survey/investigation based on which a Preliminary Memorandum would be drawn up for a coordinated multipurpose programme under the control and guidance of Central Technical Power Board.[11]

Second Calcutta Conference: August 1945

When the Preliminary Memorandum on the unified development of Damodar River, prepared by the Central Technical Power Board in cooperation with the engineers of Bengal and Bihar under the

10 B.R. Ambedkar, Damodar Valley scheme, Calcutta conference address, Indian information, February 1, 1945.

11 Proceeding of the first Calcutta conference held on January 3, 1945, File No. DW-109 (1)/45/DWII, pp. 69-71, Labour Department.

supervision of Voorduin was ready, a second conference on the Damodar scheme was held in Calcutta on August 23, 1945. Addressing the Conference, Ambedkar drew the attention of the participants to two points, i.e. (a) matters of policy, and (b) questions of method and procedure.[12]

About policy, he said flood control was the major policy and the scheme drawn up in the Preliminary Memorandum did provide for full measure of safety. The project also "Clearly shows a fine prospect of the control of the river, a prospect of controlling floods, of securing a fine area for perennial irrigation with result and insurance against famine and a much needed supply of power." The Preliminary Memorandum, he said, presented an outline of a tentative unified development plan for the Damodar valley. Benefits expected were: flood control, irrigation, power, navigation and water supply. On the basis of a design flood of one million cusecs a series of eight dams were planned, at Tilaiya, Deolbari and Maithon on the Barakar, at Bermo, Aiyar and Sanolapur on the Damodar, on the Bokaro and on the Konar. Attached to each dam would be the hydroelectric power station. Below Silna, there would be a barrage, a low diversion dam at Bermo for hydel power generation, and a thermal power station. Substantial controlled reservoir capacity for perennial irrigation and power was provided for. The possibility of providing navigation facilities and water supply was also indicated. The Preliminary Memorandum Recommended that:

> the task of continuing the planning, designing constructing and operating the dams reservoirs, water ways, power houses and transmission lines be entrusted to an Authority with powers and duties care-

12 B.R. Ambedkar (1945): "Multipurpose Development of Damodar Valley", Speech at Calcutta Conference, *Indian Information* October 1, 1945.

fully delineated by the three Governments concerned.

The Damodar Valley Authority, it said, could be an example in the multipurpose development of a water shed for India as the Tennessee Valley Authority had been for the USA.

In concrete terms, Ambedkar said, the project would give

> (1)An aggregate controlled reservoir capacity of about 4,700,000 acre-feet (2) Sufficient water for perennial irrigation of about 760,000 acres besides water for navigation purposes, (3) electrical energy amounting to 300,000 kilowatts, and (4) it would serve to promote directly the welfare of 5 million people and indirectly of many more millions.

As to methods of procedure, the Preliminary Memorandum had suggested the following:

(1) Selections of dam sites to be taken up first;

(2) further detailed investigations as to the selected dam sites before construction could begin;

(3) the agency for such further preliminary investigations;

(4) The agency for designing and construction of dams;

(5) the creation of high grade administrative machinery to coordinate and push forward the vast amount of work both technical and administrative, which was to be done during the stages of investigations and construction that were to follow; and

(6) a series of surveys relating to the best utilisation of water and power that would be eventually available in the developed areas.

In summing up these points, Ambedkar urged upon the Conference the need for a quick decision. He reminded the Provinces of their collective

responsibility and need to put their shoulders together to the task and urged upon them:[13]

> The Damodar Valley Project is a matter of grave urgency, and it would be criminal folly not to come to any decision, without which it is not possible for us to proceed further in the matter. I, therefore, hope and trust that with your cooperation we should be able today to return with our decisions fully and firmly made.

Bengal and Bihar had accepted the multipurpose development of Damodar River, but a conflict arose again on which dams were to be built first as well as on sharing of costs. Bengal with its priority on flood control, preferred the construction to start first on the lower dams, namely Sanolapur and Maithon. But if the two lower dams were constructed first, the Bihar Government argued, it would affect 1,05,000 acres of cultivable land. It preferred to have a dam higher up (in the Jingha area) at Govi rather than at Sanolapur where there were many inhabited villages and where risk to collieries by flood was substantially.

Ambedkar appreciated the point of view of both the Provinces and suggested that experts should decide about it. The site of the dam was an important but obvious point. It could not be decided in line with the wishes of Bengal; nor could it be decided to favour Bihar alone. And even if the two Province agreed upon a site, it could not be finalised without the advice of the experts. There were other aspects which also had to be gone into. He said:

> The Damodar project must be a multipurpose project. We intend that it should not only deal with the problem caused by floods, it should also provide for irrigation, electricity and navigation. Along with the question of a site, these matters have also to be examined.

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13 ibid.

The question of the location of the dams was solved at a later stage keeping in view both the multipurpose objectives of the project, economic benefit as well as the mutual interest of both Bihar and Bengal Government. The problem of cost sharing was not solved by a single formula, but by taking several considerations into account. The agreed formula generally laid down that costs of development would be shared according to the incidence of the benefits and the ability to pay. The formula rested on a calculation which Voorduin had made and the alternative proposal (a) and (b) which the Labour Department had prepared for the Second Calcutta Conference. The allocation of the common costs of the dams and reservoirs to the three purposes, namely irrigation, power and flood control and irrigation investment was then divided among Bengal and Bihar exactly in proportion to the water they received for that purpose. Bengal would get at least nine-tenths of both water and cost. Flood control was the equal financial burden of Bengal and the Government of India. All three Governments would equally share the power cost.

Most of the recommendations suggested in the Preliminary Memorandum were approved by the Conference. Both Bengal and Bihar agreed with the view that the plan outlined in the Memorandum should form the basis of a multipurpose scheme. It was agreed to proceed rapidly with further investigation and progress in regard to the project. Further investigation was to be carried out with the multipurpose character in mind. Further investigation on possible dam sites was necessary before starting actual construction, especially as regards Maithon, Aiyar and Sanolapur. The order of priority of investigation was Maithon first, Aiyar second and Sanolapur third. The Central Technical Power Board was to prepare project reports for each of those dam sites. To ensure unified control of the

preliminary operations, the entire staff engaged on further investigation of dam sites was to work under the technical direction of the Central Technical Power Board. While the ultimate intention was to constitute a Damodar Valley Authority for the administration and carrying out of the scheme, the Conference decided that as an interim measure, the Central Government should appoint a high-ranking administrative officer to coordinate all preliminary action and rapidly to push through investigations. Four engineers from the USA were to be invited to advise on the design and construction of the first two dams. The Central Technical Power Board was required to prepare a project report including a rough layout and design of the Maithon dam for examination by the American engineer's team. Investigations were to be undertaken simultaneously for the various other problems connected with the scheme. The irrigation departments of the Bengal and Bihar Governments in consultations with the Central Irrigation, Waterways and Navigation Commission, were to investigate the best methods of utilising the water made available for irrigation. Other subjects to be investigated included the development of power demand, including the setting up of nursery stations, anti-erosion works, navigational, geological and the water supply aspects of the scheme and the layout of transmission lines.

US Technical Mission

The American technical mission consisted of two eminent engineers namely Ross M. Reigel, and Fred C. Schlemmer, head civil engineer and project manager respectively, of the Tennessee Valley Authority. Before the team arrived in India in February 1946, the Central Technical Power Board, under the direction of Voorduin and assisted by A.N. Khosla and M. Narasimhan, had prepared the project report on Maithon and Tilaiya. The mission visited

Maithon, Panchet hill, Tilaiya and Aiyar and also Krishnarajasagar in Mysore and Mettur in Madras.

The team was all praise for Voorduin's Preliminary Memorandum, Riegel expressed the view that: "it represents a well-considered plan for as much utilisation of the Damodar river for the combined purposes of flood control, irrigation and power generation as appeared practicable. He also expressed the view that "satisfactory and safe structures suitable for the general purpose of multipurpose development can be constructed" on the lines indicated by Voorduin. In the opinion of Schlemmer, the programme chalked out by Voorduin was "of a stature at least as large, or possibly, considerably larger than has previously been undertaken in India, or in other parts of the world" and that it was "entirely feasible and well within the range of possibility of accomplishment" in ten or more years duration.

The mission also gave authoritative advice on certain technical features of the scheme, e.g. sequence of construction to be followed, the design of Maithon dam, the design of spillways and dykes, etc. It recommended immediate construction of a dam at Tilaiya so that the required flow could be maintained in the river during the construction of the Maithon dam. It also gave priority, after Tilaiya and Maithon, to the construction of dams at Konar or at Bokaro and Panchet hill.

Third Conference: April 1946

The reports of the Central Technical Power Board prepared by Voorduin together with the comments of the American technical mission were considered at a conference between the representatives of the three Governments concerned. The scheme had now gained momentum, and all the participants were convinced of the desirability of pushing the scheme forward rapidly. The Conference accepted the

proposals for the Maithon and Tilaiya projects as approved by the American technical mission and their Indian Associates. It was decided to commence construction of the Maithon dam in October 1947. October 1946 would have been the preferred date, but not enough time remained to obtain the consent of the two Provincial Governments and to enter into firm contracts with consulting engineers and contractors.[14]

Pending the establishment of a properly constituted Authority, it was decided to place the preliminary arrangements under an administrator with the rank of Additional Secretary to the Government. Such an Authority, the Provincial Governments agreed, was the most suitable agency for administering the scheme as they were unable to execute it themselves.

Accordingly, a draft of the constitution of the Damodar Valley Corporation was prepared by the Labour Department and considered by a committee consisting of the representatives of the three Governments in the Fourth Conference held on January 6, 1947. The final draft was approved on April 27, 1947 in the fifth and final inter-Provincial Conference. Section 103 of the Government of India Act, 1935, made it necessary that the Legislators of the participating Provincial Governments should pass resolutions agreeing to the setting up of a Corporation. This the Governments of Bengal and Bihar undertook to do. The Corporation as envisaged was given considerable autonomy and the two Provincial Governments agreed to surrender to it their powers to enable it to discharge its functions effectively. Allocation of costs was also agreed to. At the Central Government level, the Damodar Valley

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[14] Proceeding of Inter-Provincial Conference on Damodar Valley Project, held on April 24-25, in New Delhi, File No. DW-105 (10+37/1946), Labour Department.

Corporation Bill was introduced in the Constituent Assembly of India (Legislative) on December 1, 1947, was passed on February 18, 1948 and received the assent of the Governor-General on March 27, 1948.

Resettlement Policy

If the Damodar scheme was going to prevent floods and promote agriculture and the industrial development of an area of about 26,000 sq. km., it was also to submerge a number of villages and land of varying productivity in an area of approximately 435 sq. km. The trouble was that while Bengal would benefit most from the scheme, nearly all the land to be submerged was in Bihar. Bihar's special anxiety had always been to see that the displaced people, most of whom were aborigines, simple folk, received at least fair, if not generous, treatment. The Central Government was also eager that this point should be settled early, in the interest of getting all concerned to agree to the scheme. In the Preliminary Memoradum, Voorduin had indicated that:

> An enlightened policy demands that the responsibility of the agency constructing the dams does not end with the payment of compensation for this enforced evacuation of the land, but that new home and, where required, instruction in new methods of gaining a livelihood should be given to the people.

The problem of resettlement and rehabilitation was taken up for discussion at a meeting of the Labour Department held on April 22, 1946, presided over by Ambedkar. At his suggestion, the procedure followed by the Tennessee Valley Authority to rehabilitate the displaced population was discussed, to gain a practical perspective. The TVA had paid equitable value to people whose lands it had acquired, if its population relocation service could not resettle them on other land. The service could not resettle them on other land. The dispossessed peasants were also assisted to purchase land at suitable places. The constraint in India was that

since "land" was the jurisdiction of the Provincial Government, finding land for the dispossessed cultivators was primarily the responsibility of the Governments of Bihar and Bengal. The Central Government, however, regarded the laying down of a policy on resettlement of displaced persons as most important. Ambedkar suggested that dispossessed cultivators should be compensated and, as far as possible, given land for land. The Department prepared a Policy Statement on the matter, which was considered at a meeting of the representatives of parties to the Damodar scheme on April 23-24, 1946. The proposal had a smooth sailing, and both the Governments of Bihar and Bengal accepted it as a matter of general policy.

Specifically, the agreement provided that: (a) the dispossessed cultivators of the reservoir were to be paid full and fair compensation; and (b) as far as possible, this payment was to be in terms of giving land for land. With these parameters, the officer in charge of administration was to prepare a detailed scheme to assure to the dispossessed persons a source of livelihood at least as good as they enjoyed before displacement. If waste or fallow land in Bihar and Bengal could be made cultivable with irrigation and power resources from the Damodar scheme, these lands were to be made available, by acquisition or otherwise, to the displaced people on priority. To implement this policy, officers with experience of land acquisition were to be appointed under the administrative officer to make necessary surveys and enquiries.

Ambedkar's Role

All multipurpose projects, great and small, have had to clear a great deal of hurdles before they materialised. The Tennessee Valley Authority would not have seen the light of day if President Roosevelt had not staked his great personal standing in support of the project. Even on a lesser dam like the Tungabhadra, the Hyderabad and the Madras

Governments took more than twenty years to settle their differences; even so, it was constructed with two sets of builders-each Government building the portion in its own territory. The Bhakra Nangal Project, before it was given a working shape, was on the anvil for forty years. Work on the Krishnarajasagar dam was suspended for ten years after part construction.

In contrast, the Damodar scheme took shape with unusual speed and unanimity of support. The decision to harness the Damodar-Barakar system was taken in 1944; the preliminary engineering plan was ready in August 1945; it was approved in August 1945; and by the middle of August 1947 all conflicts of interests were smoothed, financial commitments of participants settled and the constitution of an autonomous corporation agreed upon. The Damodar Valley Corporation Bill was presented to the Constituent Assembly (Legislative) in December 1947 and passed in February 1948.[15] The Corporation was created on July 7, 1948 and with a nucleus of energetic and enthusiastic engineers, entered upon its gigantic adventure. It becomes difficult to believe that the entire complicated process was accomplished in less than four years.

No doubt it was a strong team spirit that achieved this stupendous task, but Ambedkar was the leader of the team. He presided over, guided and gave a lead to the first three conferences on the Damodar Valley scheme. A fitting tribute to his role was given by C.H. Bhabha, member (Work, Mines and Power), who presided over the fourth Damodar Valley Inter-Provincial Conference after Ambedkar resigned his Cabinet post.[16] In his memorial Speech, Bhabha said:

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15 See Ghosal, "The Damodar Valley Corporation-a Survey", *Indian Journal of Power and River Valley Development*, November 1959, p.1.

16 In July 1946 Ambedkar resigned from the Central Cabinet. Subsequently the Department of Irrigation and Power and with that the Damodar Valley Scheme was shifted to the

> We had moved overnight from the rut of antiquated ideas to the modern conception of waterways development, and taken the first practical step towards a comprehensive planning of resource development in a river valley. Gentlemen, I attach particular importance to the first conference on the Damodar because the torch lighted here for the first time has been since passed on to the Mahanadi, the Kosi and other river valley development schemes, and I feel sure you will all agree that we owe a debt of gratitude to all those who sponsored and piloted this First Conference on the Damodar.[17]

The outstanding achievement of the First Conference in obtaining agreement on the necessity for a coordinated scheme for the multipurpose development of Damodar Valley was not an easy affair. In the thirty months between the first and the third Conference the experts in the Labour Department produced a brilliant and comprehensive engineering works and made the proposal ready. It was a daunting task. Not only had the engineers to design their dams and other works and to estimate their costs, but meet the constantly changing demands for alternatives.

H.C. Hart wrote of the enterprise:[18] "They could take account of the rain that falls and of conformation of the valley and how they might fit together." But the other elements, namely to get the will of the inhabitants in the valley, to get the Governments of Bihar and Bengal to agree to multipurpose development of the Damodar (and not flood control alone), make them accept a River Valley Authority to administer the work of building the

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Ministry of Works, Mines and Power. C.H. Bhaba become the Cabinet member of the Ministry

17 C.H. Bhabha: "Damodar Valley Scheme Ripe for Implementation," *Indian Information*, February 1, 1947, pp. 69-73

18 H.C. Hart, "New India's Rivers' pp. 72-3.

> that the Damodar Valley Scheme was shifted to the Ministry of Works. Mines and Power, C.H. Bhabha became the Cabinet member of this Ministry.

dams, and finally share the costs of development, were in the best sense a political question. For thirty months the planning of the Damodar fell in the hands of politicians. . . . The man who in the political sense decided that Damodar would be developed was the Minister of Labour, Dr. Ambedkar. He successfully overcame the obstacles with great concern and skill and contributed to a plan as bold politically as it was hydraulically. Slowly in quiet negotiation and in conference after conference, vital political interests were discussed and somehow fitted together.

CHAPTER VI

MAHANADI AND SONE RIVER VALLEY PROJECTS

The Damodar scheme was a magnificent achievement of the Labour Department under Ambedkar's direction. Significant beginning was also made at this time on the schemes on the Mahanadi and Sone.

Mahanadi, the biggest river in Orissa, used to wreak regular havoc on its environs. The flood and destruction of July-August 1943 were the worst ever. Many temporary expedients had been tried in earlier decades to tame the fury of the river, without much success. In 1858, Sir Arthur Cotton visited the Orissa Province with the specific object of giving advice on controlling the flood water of Mahanadi. He recommended the construction of a complete system of irrigation and navigation canals, on lines of the schemes for the Godavari and Kistna.[1] Rihand also made general enquiry on the subject, but nothing came of it. From 1928 down to 1945 a series of committees studied the problem. The Orissa Flood Enquiry Committee (1928) was the first of these. In 1937 the enquiry was entrusted to M. Visveswarayya, the renowned engineer, who submitted two reports. Then followed the Orissa Flood Advisory Committee, which submitted a preliminary report in 1938, three interim reports, and the last report in March 1945. At this time, the Government of Orissa approached Ambedkar to consider the taming of the Mahanadi on lines of the Damodar Valley Project. H.K. Mahtab, a nationalist

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1 Report of the *Indian Irrigation Commission*: *1901-3 Part II,* Provincial Calcutta, 1903, PP. 150-4.

leader from Orissa, also requested him to pay special attention to the problem.

Cuttack Conference: November 1945

In response to Orissa's request, the Labour Department arranged a Conference on November 8, 1945 between representatives of the Government of India and the Governments of Orissa, the Central Provinces and Eastern States to discuss the possibilities of developing Orissa rivers. Referring first to the economic problem of Orissa, Ambedkar, who chaired the session, observed:

> To say that water problem of Orissa was of flood is both over simplification and understatement of the problem… The people in Orissa are subject to many afflictions such as constant exposure of her people to flood, accompanied by draught and famine. Deterioration in health and of internal communication. But above all it is a problem of under development and high poverty… This is the case when it has substantial natural resources. Its precious possession is her water wealth.

Much effort had undoubtedly been spent in inquiring into the question of flood by several committees, he observed:

> With all respect to the members of these committees, I am sorry to say they did not bring the right approach to bear on the problem. They were influenced by the idea that water in excessive quantity is an evil, and what needs to be done is to let it run into the sea in an orderly flow. Both these views are now regarded as grave misconceptions, as positively dangerous from the point of view of the good of the people.[2]

If water resources were to be conserved, embankments were a wrong solution. Orissa delta

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2 B.R. Ambedkar (1945): "Multipurpose Plan for Development of Orissa's Rivers," Speech at the Cuttack Conference, Indian Information, December 15, 1945.

was not the only area with abundant water. The Missouri, Miami and Tennessee rivers posed the same problem in the USA, which had evolved the solution of damming the rivers at various points to conserve water permanently in reservoirs and put it to multiple purpose. Orissa needed to follow that method.

In Orissa, the storage scheme would not only give irrigation and electricity, but also provide a long line of internal navigation.

He said:

> Orissa wants to get rid of the evil of floods. Orissa wants to get rid of malaria and other-to use American Phraseology-low income diseases causing ill-health and corroding the stamina of her people. Orissa wants to raise the standard of living of her people and to advance her prosperity by irrigation, by navigation and by producing cheap electrical power.
>
> All these purposes can fortunately be achieved by one single plan, namely to build reservoirs and store the water which is flowing in its rivers.[3]

Complementing the participants on their readiness to consider the question of submergence of large areas of land in Orissa, the Eastern States and in the Central Provinces, he said the benefits resulting from a scheme of united and multipurpose development would far outweigh the loss of lands due to submergence. The project could be a success only if it was treated as a regional project, and not if it was treated on a local level. The Province of Orissa would fail if it were to take up a project confined to its own boundaries. The project being essentially regional it raised the question of submergence of State and Provincial territory to the extent necessary. It was for the provinces involved to come together, to share a part of their sovereignty over different sections of the rivers flowing through their territory

3 ibid.

so that the project could be undertaken, planned, devised and run by a single Authority without disturbance either from the Provinces or from the States. The welfare of the public was far more important than the sovereignty whether of the Government of Orissa or of the Rulers of the Indian States affected. Sovereignty had to be used for advancing the welfare of the people and not for blocking it, he urged. With cooperative and coordinated effort on the part of the Central Government and the Provincial and State Governments, it was possible to harness for beneficial use this perennial source of wealth-the water of Orissa rivers-which were then running to waste and causing untold suffering on their way to the sea.

The agenda for the meeting was to consider the desirability of :

(a) undertaking, forthwith, surveys and investigations of Orissa rivers with a view to preparing schemes of unified and multipurpose development comprising flood control, navigation, irrigation and drainage, soil conservation and power development;

(b) concentrating, first, on surveys and investigation on the Mahanadi river towards its control and development:

(c) carrying out surveys and investigations by the Provincial Governments in conjunction with, and under the general direction of, the Central Waterways, Irrigation and Navigation Commission. A through survey and investigation of the natural resources and physical feature of the region was necessary, he said, to prepare a comprehensive scheme for its development.

The Conference agreed that, first, the possibilities of controlling and developing the Mahanadi river were to be surveyed. The surveying would be done by

the Provincial Governments in conjunction with and under the general direction and supervision of the CWINC. The Commission would commence with a preliminary reconnaissance over the entire length of the Mahanadi with the help of the Orissa Rivers Division of the Provincial Government and full cooperation of the Central Provinces Government and the Eastern States. If, as a result of such reconnaissance, a prima facie case for the development of the river for the benefit of the Provinces and States concerned was established, further detailed survey and investigation would be under-taken. Only at this stage would the parties concerned need to participate fully both administratively and financially.

Hirakud Foundation Stone Laid: March 1946

In line with the decisions of the Cuttack Conference, A.N. Khosla, Chairman of CWINC made a preliminary survey of the Mahanadi river to identify the site for the dam. Writing to the Adviser to the Governor of Orissa, Gokhale, he said that he had inspected the sites of Naraj, Tikarapara and Sambalpur dams and found all the three sites good for the construction of dams.[4] The preliminary survey would be completed by February 1946, he said, and construction of the first dam commenced by October 1946.

A tentative scheme worked out by the CWINC after the survey with the help of the Government of Orissa and the States comprised (a) the construction of three dams across the mainstream of the Mahanadi to store the surplus monsoon supplies with a view to flood control and their release during the dry weather for purpose of irrigation, navigation and power generation; (b) the construction of

4 Office of CWINC, Labour Department, Letter by A.N. Khosla, dated November 12, 1945 to Mr. Gokhale, Adviser to H.E. Governor of Orissa, Cuttack, Labour Department

navigation locks at these dams and possibly at intermediate sites for making the Mahanadi navigable for a distance of over 500 km from its mouth at the sea; (c) a system of canals for perennial irrigation; (d) power plants at the three dams to provide cheap power for use in agriculture, industry and in exploiting the large mineral wealth of the area; (e) drainage and anti-malaria works; and (f) the provision of facilities for fish culture and recreation. The three dams identified were Hirakud 15 km above Sambalpur, Tikarapara some 210 km downstream and Naraj near Cuttack.

The Hirakud dam was a comparatively simple and straightforward affair. The entire dam site and submersible areas were entirely in the Orissa Province. The dam would be 5 km long and would store a total of five million acre feet of water. Allowing for one and a half million acre feet of dead storage, the dam was expected to provide adequate irrigation to 800,000 acres in Sambalpur district and in Sonepur, a State of the Eastern Agency group, and possibly, Aiakhol. The dam would also generate 50,000 kW of energy for economic transmission to the surrounding 300 km. Almost the entire expenditure on the dam was expected to be productive. Income from electricity and irrigation was expected to cover the interest, maintenance and operation charges on the initial outlay.

The Hirakud dam received priority also because of the interest shown in it by Viceroy Wavell. From the correspondence between Wavell and Ambedkar (see Appendices VI.1 and VI.2), it would appear that Wavell was more anxious that Governor Lewis of Orissa should lay the foundation stone of the dam before he laid down office; Ambedkar, on the other hand, was keen that the laying of the foundation stone should mean a firm promise of execution of the scheme. Wavell wrote:

> I understand that in the course of negotiations the desirability of making an early start with the Mahanadi scheme by the construction of a dam at Sambalpur was mentioned. Orissa is a very poor and backward Province, and if it is technically sound to construct the Sambalpur dam-a point on which I think we should be able to satisfy Rowlands agreement, to go ahead almost immediately. You know my interest in water control and irrigation, perhaps we could aim at a decision early enough to enable Lewis to lay the foundation stone before he hands over charge on the 31st March.

In reply, Ambedkar Wrote:

> I have had this matter examined by my Department. Khosla has reported that the Sambalpur Dam must definitely form part of the Mahanadi scheme, that the geological report is satisfactory...He considers, however, that it is so certain that the Sambalpur dam will form part of the Mahanadi Scheme that it is quite legitimate to lay the foundation stone in March...If a decision to lay a foundation stone is taken we can authorise the Governor to state that the Government are determined to control and utilise the Mahanadi to the best advantage of the country and that in this matter the Provincial Government hopes to receive all reasonable support from the Central Government...

The upshot of this discussion was that the foundation stone for the Hirakud dam was laid by Governor Lewis on March 15, 1946, before he retired a fortnight later. By coincidence or by design, the foundation work on Hirakud was also completed before Dr Ambedkar laid down office in the Central Cabinet three months later. The initiative that he had taken prompted by H.K.Mahtab in November 1945 was thus given a definite shape in the shortest possible time of six months.

The final execution of the scheme, however, had to wait until after independence. Soon after independence on August 28, 1947, the Orissa Assembly unanimously adopted the resolution regarding the Hirakud dam project as follows:

> That this assembly do resolve to take into consideration the report of the Mahanadi Valley Development-Hirakud Dam Project made by Rai Bahadur A.N. Khosla, Chairman of the Central Waterways, Irrigation and Navigation Commission, and that the Government be moved to take all necessary steps to give effect to the recommendations made in the report of the Mahanadi Valley Development-Hirakud dam project.

In catalysing this step also H.K. Mahtab was instrumental. He prodded the Orissa Legislature to decide promptly on the construction of the multipurpose dam as the first step towards Orissa's economic and industrial prosperity. The Hirakud Dam was finally completed in 1957.

The Sone Project

The Sone Valley project was another multipurpose scheme which the Labour Department initiated during 1944-45. River Sone rises in Madhya Pradesh and flows onward to UP before merging with the Ganga. Around the middle of November 1944 the Government of the United Provinces drew the attention of the Labour Department to the potentialities of development of Sone river. The Department responded favourably. In its letter dated December 8, 1944 it observed that the potentialities for multipurpose development and management scheme on the river Sone were immense. These included possibilities relating to increased supplies of water for irrigation, perennial hydel power plant, provision of hydel power for pumping from tube well or from rivers and for industrial development, supplies of water for navigation on the Ganga and improved flood control. [5] The project, however,

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5 A letter by Secretary, Labour Department, Government of India, to the Secretary to the Government of UP, CP and Bihar, concerning regional consideration of problems relating to the Sone river, dated December 8, 1944. File No. DW/IRI/ 336/ 9.8.45.

appeared essentially suitable for regional development. The dam was to be situated in the United Provinces and the area submerged was in the Rewa State. Direct benefit would accrue not only to the United Provinces and Bihar but also to the Central Provinces and Chandbhakar, Korla and Sarguja, Jeshpur and Mahir States, while the improvement of navigation on the Ganga was likely to be of benefit to Bengal. The Central Government was willing to consider participating in the project but subject to the provision that all the details about the financial and technical prospect of the scheme were worked out by an expert body. This required agreement between the Provinces and the States concerned.

Conference on Sone: March 1946

To bring together the parties concerned with the proposed Sone project and to make a preliminary investigation, the Labour Department organised an Inter- Provincial Conference in Delhi on March 10, 1945. Besides its significance for the development of the Sone area, the Conference also has significance in the development of India's policy on waterways. It was in this Conference that the Labour Department formulated and gave a definite shape to the concept of regional and multipurpose development (of the river valley basin as a whole) and the concept of River Valley Authority for the management of water resources on inter-State rivers. In the first Calcutta Conference on Damodar Valley project which was held two months before the Sone Conference, Ambedkar had only made a mention of these concepts. In the Sone Conference, the details were spelled out.

Opening the Conference, Ambedkar emphasised the importance of the scheme to the economic development of the UP, Bihar, some of the Central India States and the Central Provinces. If its possibilities were to be fully exploited, he said it was

necessary to make a regional rather than local approach to the problem. All parties had to realise that this meant that ultimately there must be agreement to set up an appropriate organisation to which they would give by agreement certain powers, principal of which would be bulk supply of electricity and water for irrigation and navigation. The Memorandum prepared for the meeting explained the essential features of the Authority (See Appendix II.I):

(i) Such Authority must be given by Provinces and States full authority over the waters of the Sone and its tributaries.

(ii) Provinces and States must agree that such Authority should have the sole right to generate electricity (except for nursery schemes) in the area covered by the Authority.

(iii) Provinces and States must agree not to abstract water without the approval of the Authority.

(iv) Those Provinces and States in which dam sites are situated must agree to the submergence of lands on such terms as may be arranged.

It was necessary that the Authority should be set up by Central Legislation. The Provinces and States on their part, had to give, by agreement or by contract, such executive authority as vested in them for the erection of dams on and otherwise dealing with the waters of the river. It was necessary to provide the Authority with the necessary flexibility and initiative adequately to develop the resources of the river. The necessity to consult all Governments before any particular step was taken had to be eliminated to the extent to which the Provinces and States were prepared to do so. The Authority would, however, be empowered to do only those things specifically permitted in the contracts with the Provinces and States which would remain the final

authority to plan and develop the future of the river, the river basin and the areas to be benefited by the development scheme. At the same time, the Authority, if it was to achieve efficient development, had to have its right protected. It was no use setting up an Authority to develop the hydroelectric power of a large river if the Provinces and States were going to allow the setting up of other electric supply organisations in the area economically covered by the proposed development except in agreement with the Authority. Further, it was necessary that the Authority must be given the right to sell its power anywhere within economic transmission distance.

It was also essential that the Authority had both the finance and the powers to deal with all matters that might arise in regard to power production and transmission. Limits had to be put on their powers of expenditure but the limits had to be widely framed. The Authority would not be subject to the strict budget control of either the Centre, the Provinces or the States. It would have to be trusted. The financing authorities in any case would have the power to appoint and to discharge directors and even the power to refuse further finance if they were not satisfied. Financing would have to be an organised, joint affair but it had to be so devised that the Authority, once it was set up, was not deprived of finance provided it was operating satisfactorily for the purpose which had been put in its charge.

The Memorandum also explained the essential elements of the concept of regional and multipurpose development of river valley. The water reservoirs of the rivers were to be used for multipurpose use including irrigation, hydroelectric power, navigation, water for domestic, industrial and urban use, and power for pump irrigation and industrial use. The concept of multipurpose use was to be linked with the regional development of the entire valley basin and called for regional planning as a whole.

Such matters as plans for industrialisation, social well-being, reforestation, relocation of population, roads and schools, provision of extra irrigation whether gravity or by pumping cooperative development, fertiliser and farm demonstration programme and the setting up of Provincial and municipal planning boards was to be necessarily the responsibility of the Provinces and States concerned but the Authority was to have a clear interest in such developments and might be allowed to assist with its advice the coordination and development of plans. There had to be the fullest cooperation between the Authority and the Provinces, States, Local bodies and with the people in the areas to be developed if the Authority was to be able to achieve the maximum good of which it was capable.

In many ways, the Sone Conference was a torch bearer for the development of multipurpose programmes. The proposals prepared at this Conference and the principles formulated became the guideline for the Damodar Valley projects and other multipurpose schemes. One purpose of the Sone Conference was to let the Provinces and States know the implication of the decision to develop Sone river valley. But the immediate and main purpose was to decide how to proceed in carrying out preliminary investigations and surveys. All the participating Provinces of UP, Bihar, Central Provinces and the States of Rewa generally approved the proposal for regional development of the Sone basin, the establishment of a Regional Authority and the proposal for a preliminary investigation and survey. When it was conceived and promoted by the Labour Department, the Sone Valley Project was to be a regional multipurpose project with an Authority to undertake the work. It is a different matter that thereafter, the Sone's development took a different course after Ambedkar laid down his office.

CHAPTER VII

ELECTRIC POWER POLICY

While irrigation had started receiving government attention since the latter half of the nineteenth century, the need for government initiative for development of electric power was realised quite late. A Department of Electricity did exist at the Centre, but there was hardly any all-India policy and organisation with regard to electricity development.

The first concrete measure to develop electric power would seem to have been taken in 1905, when the Central Government issued a letter to the Provinces about the need to develop electricity in the country, but for many years nothing much was done. It was only after the Industrial Commission Report was published in 1918 and that of the Indian Munition Board in 1919, that the Provincial and Central Government began to take any active interest in electricity. The Industrial Commission recommended that the Government conduct a hydrographic survey of India rather than leave it to private enterprise. The recommendation was accepted, and three reports came out between 1919 and 1922, containing information Province by Province, regarding the possibilities of power supply under various heads including hydro-power. But the surveys almost proved a wasted effort, for under the changes made in the Government of India in consequence of the Act of 1919, electricity became a Provincial subject. There was not even a provision in the Act to permit the Central Government to spend its revenue on matters which it felt deserved consideration although they were outside its field of administration. The result was that it became

impossible for the Government of India to finance the hydrographic survey or electrical works.

World War II, however, brought about an urgency for power supply to various ordnance factories and industries engaged in the war effort. Accordingly, the Government of India created in 1941 the Office of Electrical Commission, specifically to facilitate arrangements for supply of power to various ordinance factories engaged in the war effort. When Ambedkar took over the Labour portfolio in July 1942 with electric power as one of its important departments, there was hardly any all-India policy, or information base on production distribution and administration of electricity.[1]

Post-War Economic Plan and Electric Power Policy

An all- India policy and planning for electric power development was commenced in the post-war reconstruction plan. The Plan draft Document stated that among the long-term schemes involving large capital expenditure were "the development of electric power as the basis of industrial development and also agricultural development, including pump irrigation and rural industry." The organisational setup for electricity development consisted of Policy Committee No. 3C of the Reconstruction Committee, which had its Official Committee with the Secretary to the Labour Department as its Chairman, a Subject Committee to deal with technical matters and a Consultative Committee of Economists.[2] Ambedkar,

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1 1. B.R. Ambedkar (1943), "Post-War Development of Electric Power in India, "Indian Information, November 15, 1943, pp. 279-81.

2 The Consulative Committee of the economists attached to Policy Committee No. 3C "Public Work and Electric Power". Reconstruction Committee of the Council Post-War Development Policy, Part II, 1944, pp. 33-34, Finance Department, Planning, Planning Branch.

being the Cabinet Member for Labour, was the President of the Policy Committee and was closely associated with the Official Committee in the Labour Department.

The main task before the Policy Committee was to study the problems connected with power and to recommend the best way of solving them. The primary concern was to deal with problems arising out of the administration, production and distribution of electricity and to recommend principles which would guide the Government of India. To translate the recommended measures into action was the responsibility of the Official Committee.

After it was established in September 1943, the Policy Committee for Electric Power first met on October 25, 1943. By the time it met again on February 2, 1945, Ambedkar and his Department had worked hard to study the problems of electricity generation, pursuing various Provinces and States to impart an all-India perspective to electricity development. [3] The discussion, and the follow-up action resulting out of the decisions of these two conferences led to the formulation of a new electricity policy, which became the foundation of the present efforts towards electricity development in the country.

While opening the first meeting of the Policy Committee, Ambedkar observed that the Primary object of the meeting was to deal with the problems arising out of the administration, production and distribution of electricity and to recommend the principles which should guide the Government of

3 See, Government of India: (a) Record of the First Meeting of Policy Committee No. 3-C, (Public Works and Electric Power) held at New Delhi on the 25th October 1943, (b) Record of the Second meeting of Policy Committee No. 3-C (Public Work and Electric Power) held at Delhi on October 25, 1945 Labour Department.

India in respect of future policies. So far as he could see, the questions which the Committee had to concern itself with were:[4]

1. Whether electricity should be privately owned or State Owned.
2. If the former, whether there was need to impose any conditions so as to safeguard the interest of the public.
3. Whether the development responsibility for electricity should be of the Central Government or the Provincial Government.
4. If the former, what would be the most efficacious method of administering it so as to provide cheap and abundant supply of electricity and avoid waste of resources.
5. If the responsibility was to be of the Provinces whether the administration by the Provinces should be subordinate to an Inter-Provincial Board.

Every one of these questions had two sides, he added, but in deciding the better method of developing electricity, it was necessary to bear in mind three points:

1. Which of the two would give us power not at a cheaper but at the cheapest price;
2. Which of the two would give us power which would not merely be sufficient but which would be abundant; and
3. Which of the two would enable India to be equipped with electricity by treating it on a strategic basis, that is to say, as an undertaking which must be started without consideration of immediate profit.

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4 Record of the First meeting of Policy Committee No. 3-C (Public Works and Electric Power), December 25, 1943, New Delhi: Manager of Publications, 1944.

India wanted an assured supply of power, cheap power and abundant power, he said. The other issues which he addressed were:

1. Whether it was necessary to establish a Power Supply Department at the Centre whose duty it would be to make a systematic survey of the available sources of power, namely, coal, petrol, alcohol and running water, etc., and to suggest ways and means of increasing generating capacity.
2. Whether it was necessary to establish a Power Research Bureau at the Centre to study problems connected with the relation between the sources of power and the machinery in order to promote the most efficient use of available power.
3. Whether it was necessary to adopt some means to train Indians in electrical technology so that India would have a staff to plan and to carry out schemes of construction, maintenance and improvement in electrical plant and machinery.

Among the more significant conclusions that resulted from the meeting, the following are noteworthy:

1. The development of electricity supply in India to be actively pursued as a State or quasi-State enterprise and steps were to be taken to eradicate any factors in the present system which retarded the healthy growth of electrical development in the Provincial, State and local authority-owned under takings as well as the commercially owned under takings.
2. A Central Organisation was to be set up by the Government of India to undertake the following work:

(a) Collect and maintain adequate statistical data of electricity supply throughout India.

(b) Act as a Central advisory body in all matters relating to improvements in the administration of the Indian Electricity Act, 1910, with particular reference to the establishment of model conditions governing the provision of licenses.
(c) Set up a well-equipped standardising, testing and research organisation for electricity supply and problems allied therewith.
(d) Undertake education and propaganda to encourage the accelerated development and utilisation of electricity.
(e) Assist Provincial or State Governments, where required, in planning major power schemes.

3. Overseas training of a selected number of India engineers in the administrative and commercial side of electricity supply, and overseas training of electrical engineers.

State Vs. Private Enterprise

The Committee had to make up its mind on two major issues, namely State versus private enterprise and Provincial versus Central control. As guideline, it had nothing to go by except the following comment of the Reconstruction Committee of the Council (RCC).[5]

> The question of State versus private enterprise was crucial...for all round development but this could be better resolved with reference to each particular subject of development, e.g. industries, hydro-electric development, civil aviation, etc. rather than by general declaration now.

The considered opinion of the Electric Power Policy Committee was that:[6]

> the further development of electricity supply in India be actively perused as a State or quasi-State enterprise

5 Reconstruction Committee of Council, Minister of the 10th Meeting held on Monday, September 1944. File No. 2/10/RC/1944.
6 Record of the First meeting on Public Work and Electric Power (1943), op. cit.

> and that steps be taken to eradicate any factors that retard the healthy growth of electrical development in the Provincial, State or local authority owned under takings as well as the commercially owned undertaking.

Future electricity development plans, therefore, were to be a State or quasi-State enterprise. But what about existing plants? The issue was raised in the second meeting of the Policy Committee. Should the State, as a general rule, exercise an option to take over an undertaking whenever such option arose? Also, should the State exercise control over existing privately owned undertakings for the purpose of securing bulk supply for regional development or control of generation? The meeting reached the following conclusions:

1. The development of electricity supply in areas outside existing licenced area or future development was to be actively pursued as far as possible as a State or quasi-State enterprise, but if the State was not quasi-State enterprise but if the State was not prepared to undertake such development, private enterprise was not to be excluded.
2. Provided efficient and economic operation could be assured to the public, options to acquire an undertaking should as a general rule be exercised by the Provinces when they arose.
3. Steps were to be taken to eradicate any factors that retarded the healthy and economic growth of electrical development on regional lines whether in Provincial, State and Local authority-owned or in commercially owned electrical undertakings.

In order to have regional and integrated development of electric power, the need and role of Central Government control in some areas was emphasised. The Committee observed:

> If a systematic and coherent policy of electrical development was to be followed all over India, it was

> necessary to ensure that general uniformity of policy was not damaged by isolated action on the part of local authority or administration that run counter to that policy. It was therefore thought logical in the interest of the planned electrical development of the country that both the Provincial and Central Governments should possess powers to prevent such isolated action. As far as the Provincial Governments were concerned they already had power to exercise the option of purchase where local authority did not exercise its option.

The Committee suggested that in the interests of regional development the Central Government should also have power to further the inter-Provincial development of electricity. The case of an Electricity Supply Undertaking which supplied power to two or more Provinces or States was clear enough. The appropriate authority that could satisfactorily exercise the option to purchase was the Central Government and or inter-Provincial authority under Central control.

The emphasis, thus, was on perusing electricity supply enterprise as State or quasi State enterprise. The authority to renew the licence of private enterprise or to take over or purchase existing units was already vested with local authority. Where the local authority did not elect to exercise the option, it was to pass to the Provincial Government. In the interest of regional development the Central Government was to have an option to participate in inter-Provincial Schemes. On many of these issues a clear lead was provided by Ambedkar in his opening remarks.[7] With regard to the desirability of having State and or private ownership in electricity enterprise, he observed:

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7 Dr BR Ambedkar (1943), "Post-War Development of Electric Power in India," Indian Information, November 15, 1943 and "Post-War Electric Development", Indian Information, Febraury 15,1945.

the issue between State enterprise and private enterprise had been a matter of controversy. This controversy was resounding in India in full blast since Government had started the project of planned economy. Jevons in his tract on "State in Relation to Industry" attempted to formulate certain economic criteria by which the line between State enterprise and private enterprise could be drawn, and which had been the gospel of the opponents of State enterprise. According to Jevons, there were four criteria which earmarked an industry for State Ownership. They were (1) small capital account; (2) routine operations; (3) the coordination of several services such as Posts, Telegraphs and Telephone; and (4) the sufficiency of a single all-embracing plant as in the case of water and gas supply. The followers of Jevons in this country proposed to add some more criteria, the object of which was to restrict the field of State enterprise except in one case, viz., they were prepared to enlarge the field by allowing the State free scope in such cases as could not be profitable for private enterprise to undertake (see Appendix V).

In the end he observed that "it was not necessary...to enter into the controversy...for there were very few opponents of State ownership and State Control who did not make an exception in the case of electricity." Quite close to the issue of ownership of electricity enterprise was also the issue of Provincial or Central control. He was of the opinion that the Central Government should have option to participate directly in production and supply of electricity. Considering that electricity was a public utility, there ought to be no difficulty in vesting the Central Government with such authority. The question was, at what stage and under what

conditions the Central Government should enter. Ambedkar argued that:

> to those who believed in State enterprise it should be a matter of small consideration whether the enterprise should be Provincial or Central and little or no objection should be raised to Central control in cases where a Province did not desire to take on such control or where in the interests or regional development extending beyond the boundaries of a Province Central control might be considered necessary. In the case of electricity, as in the case of waterways, suitable schemes could be limited by Provincial boundaries, and though there must clearly be the closest co-operation and co-ordination between the Centre and the Province, it did seem advisable that the Centre should be able to step in, in cases where the State control was found necessary for regional development and where a Province did not itself wish to bring an undertaking under State control.

He thus visualised a more positive and active role for the Central Government in the production and supply of electricity in inter-Provincial schemes for the purpose of integrated and regional development of electric power.

In the light of these deliberations, the Final Policy Statement, which the Labour Department prepared and which subsequently became part of the Preliminary Draft on the Post-War Development Policy, was as under:

1. The policy of Government is to secure the development of electric power on a regional basis, to promote the maximum economic development and utilisation of such power, and to eradicate such factors in the present system which retard the healthy growth of such development. This policy may involve the development of electricity supply in India as a State or quasi-State enterprise.

2. In furtherance of this policy, Government have secured allotment of manufacturing capacity for additional heavy power equipment for several key electricity development undertakings in the country.

3. They have also decided to set up a Central Technical Power Board for the whole of India:

(a) To initiate, coordinate and put forward schemes for electric power development throughout the country in consultation with provincial and State Governments concerned:

(b) To set up a well-equipped standardizing, testing and research organisation for electricity supply and problems connected therewith: and

(c) To undertake education and propaganda to encourage the accelerated development and utilisation of electricity.

4. Government have accepted the policy of furthering the industrial use of electricity in the country, e.g. by the manufacture of fertilizers, etc.

5. In order to implement the policy of large-scale development throughout India, schemes for the training of electrical engineers abroad will be perused. The scheme will provide not only for training in the commercial administrative sides of electricity undertakings, but also for further advanced training of selected men in technical subjects.

Establishment of Central Technical Power Board

An important element of the new electric power policy was the decision to create a technical body at the Centre to encourage, plan and press forward the widespread development of public electricity supply throughout the country. The roots of this decision were to be found (as in the case of CWINC) in the

decision of the Reconstruction Committee of the Council (on January 8, 1944) to appoint a "development officer" to plan the post-war development of electric power. At first, the Labour Department had suggested appointing a hydro-electric consultant or expert (on the pattern of an irrigation expert), but later decided to constitute a Central Technical Power Board (CTPB), in which a hydro-electric expert was to be made a full-time member to deal with hydro-electric problems. The decision to constitute such expert body at the Centre was taken in the first meeting of the Policy Committee (October 1943). After consultations with the Provincial Governments, the Board was established on November 8, 1944 as a Central organisation for the all-round electrical development of the country. Announcing this in the second meeting of the Policy Committee (February 2, 1945), Ambedkar observed:

> The setting up of the Board with high level experts will assure you how very anxious the Government of India is to make the Board a strong technical organisation designed to collect ideas, conduct surveys and prepare schemes for the electrical development in consultation with Provincial and the State Governments. The main objective is to advise the Central, Provincial and State Governments in regard to the universally accepted policy of encouraging, planning and pressing forward the widespread development of public electricity supply throughout the country. The Board is to be a strong technical organisation designed to collect ideas, conduct surveys, and prepare outline schemes for electrical development in consultation with Provincial and State Governments.

The Board was to have a Chairman, two full time members, three part time members and such number of ex-officio members as were thought from time to time to be necessary. The Electrical Commissioner with the Government of India was to

be its Chairman. It was to have a staff of engineers and electrical establishment (See Appendix VII.1). The Board was charged with the general responsibility of initiating, coordinating and putting forward schemes for electric power development and utilisation throughout the country in consultation with the Provincial and State Governments concerned.

The Board's organisation was divided into four sections as follows:

(a) Power system planning;

(b) Power Utilisation:

(c) Public relations and propaganda; and

(d) Secretary, finance and treasurer.

The section on power system planning covered items such as hydro power station sites, hydro electric surveys power transmission and thermal powre station investigations. The item on power utilisation had four subdivisions, namely.

i) Power requirements of and supplies to electro chemical and metallurgical industries.

ii) Power requirements of and supplies to industrial power and mining.

iii) Power requirements of and supplies to rural electrification and power irrigation, and

iv) Standards, research and the development of electrical manufactures.

Change of Name

It is not generally known that the Central Technical Power Board of 1944 was the precursor of the present day Central Electricity Authority, probably on account of the series of changes that have occured in the name and organisational set up of the CTPB (See Appendix VII.2). The first such change

occurred in 1948, when the Government of India decided to amalgamate the functions of the four organisations then dealing with electricity and waterway development, namely the Electrical Commissioner with the Government of India, the Central Technical Power Board, the Consulting Engineer-Waterways and Irrigation, and the Central Waterways, Irrigation and Navigation Commission into two organisations, to be called the Central Electricity Commission and the Central Water-Power, Irrigation and Navigation Commission (See Appendix 7.3). The functions of the Consulting Engineer for waterways and Irrigation and the CWINC, and such part of the duties of the CTPB as related to hydro-electric power generation, were given to the newly constituted CWPINC, while work related to thermal power and other functions of the CTPB were transferred to the Central Electricity Commission (See Appendix VII.3).

On April 21, 1951 the Central Electricity Commission and the CWPIN Commission were merged into one organisation, to be called the Central Water and Power Commission (CWPC) (See Appendix VII.4). The Commission was empowered to carry on "the general responsibility of initiating, coordinating and furthering, in consultation with the State Government concerned, schemes for the control, conservation and utilisation of water resources throughout the country, for purpose of flood control, irrigation, navigation and water power generation, schemes for thermal power development and schemes for transmission and utilisation of electric energy throughout the country. The Commission had a Water Wing and a Power Wing.

When the Ministry of Irrigation and Power was constituted in 1952, the Central Water and Power Commission became part of it. But when in 1974 the Ministry was bifurcated, with irrigation becoming a department under the Ministry of Agriculture and

Irrigation and Power becoming a department in the Ministry of Energy; the CWPC was also bifurcated. Its Power Wing was renamed the Central Electricity Authority and its Water Wing became the Central Water Commission (Appendix VII.5).

Since its establishment in November 1944, the Central Technical Power Board, as the apex organisation for electric power development during the last five decades, has been intimately associated with planning, investigation, design and management of various aspects of electric power development in the country. Its first assignment was to prepare the technical report on Damodar River Valley project in 1945-46. Since then, it has come a long way in fulfilling the objectives set before it.[8]

Regional Development of Electricity and Grid System

A vision of power development on a regional basis is much more advantageous than a local outlook. An interconnected, contiguous power system brings down the cost of power generation on account of diversity of load demands, reduces the inputs needed for standby capacity, and overall, results in better use of transmission facilities, etc.[9] The approach envisages unified and integrated development of the power resources of each region basin and Sub-basin and the transfer and interchange of power between regions, basins, and sub-basins in the overall interest of the country and region. The concept of regional, as distinguished from local, development of

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8 Among others, see for the contribution of Central Electric Authority up to 1970, "25 years of CWPC: 1945-1970" CWPC Silver Jubilee Souvenir, Central Water Power Commission, New Delhi, April 1970.

9 See S.S. Murthy, "Development of Regional Grids in India", Dr. A.N. Khosla, "Central Water and Power Commission: April 1945 to April 1970", in "25 Years of CWPC: 1945-1970", Ministry of Irrigation and Power, New Delhi, April 1970.

electricity in different parts of the country was suggested by the Labour Department under the post-war electric power policy. This, in fact, was an important aspect of the "Policy Statement on Electric Power Development", which reads: "The policy of Government is to secure the development of electric power on a regional basis to promote the maximum development and utilisation of such power, and to eradicate such factors in the present system which retard the healthy growth of such development."[10] Approving this line, the second meeting of the Policy Committee noted: "economical growth of electrical development should be pursued on regional lines whether in Provincial, State and local authority-owned or in comercially-owned electrical undertaking."

Emphasising the significance and need for adopting a grid system as part of the new electric power policy, Ambedkar said in the meeting:

> During the last year, the Government of India had given a great deal of thought to the regional, as distinguished from the local development of electricity in different parts of this country on the basis of 'Grid System' in U.K. They had felt more and more that if the services offered by electricity were to be brought to the door of producers as well as of consumers, at the cheapest possible rates compatible with efficiency, they might have to follow, albeit cautiously and gradually, the triple programme on which the Central Electricity Board in the UK had worked from the very beginning, viz:
>
> a) The creation of large-scale power stations located in the main industrial areas under the control of public supply undertakings:
>
> b) The construction of main transmission systems (with smaller secondary lines attached to

10 Reconstruction Committee of Council: Post-War Development Policy p.33. Planning and Development Department, 1944-45.

them for tapping agricultural and other outlying areas) so that the entire region to be developed by a main system could be held in a power ring or a series of power rings radiating out from the large scale power stations: and

c) Standardisation of frequency as far as possible within the region to be developed by the power system.

Observing that this triple programme constituted the foundation of the grid system, he expressed the hope that if such a scheme of regional development was adopted in this country, it might before long bring the great boon of cheap electricity service to the door of everyone, high or low.

The importance of the concept of 'regional grid' is now well recognised in India. In systematic efforts to unify the power systems on a regional basis the country has been demarcated into five regions to develop into regional grids, namely Northern Western, Southern, Eastern and North-Eastern. Regional Electricity Boards, advisory in nature, have also been constituted for each region. These facilitate organisation, dealing with operational aspects such as preparation of operation schedules, coordination of overhaul and maintenance programmes, determination of the inter State exchanges of power, and evolution of suitable tariff structure for exchange of power.

Training of Engineers

The first Policy Committee meeting also took two other important decisions. One related to the training of Indian engineers and the other to the acquisition of heavy power equipment. Ambedkar was keen about Indians getting sound training in electrical technology. It was decided in this meeting to prepare schemes for the overseas training of selected number of Indian engineers in the administrative and commercial aspect of electricity supply and also for overseas training in engineering.

The Labour Department, in consultation with the Provinces/States and certain public electric undertakings had prepared a scheme under which ten Indian engineers were selected, four of them to receive training in the United Kingdom, four in USA (with the Tennessee Valley Authority) and two in Canada (with the Ontario Hydro-Electric Power Commission). Two of the officers belonged to the Central Government, four to Provincial Governments, two to State Governments and two came from Public Electricity Supply Undertakings.

About procurement of electricity equipment, machinery, tools and plants, Ambedkar observed that it was necessary to obtain machinery from outside the country, mostly from Great Britain. Soon thereafter, the Labour Department organised a conference of leading power engineers in the country, both official and non-official, for considering post-war electric power development. Among the first things the Conference did was to prepare a schedule of heavy power equipment required by India immediately after the war. The Labour Department soon got working on this projected need, and Ambedkar could report to the second meeting of the Policy Committee, held on February 2, 1945 that a schedule of heavy power equipment required by India had been prepared and steps taken to reserve for India the necessary manufacturing capacity. The total capacity reserve was over 850 megawatts, which was equivalent to nearly 65 percent of India's existing installed capacity. He suggested that the requirements for equipment had been underestimated, but as further delays would have gravely jeopardised India's interests, Government had taken action promptly on such data as could be collected within the limited time that was available.[11]

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11 B.R. Ambedkar, "Post-War Electric Power Development", Indian Information, February 15, 1945.

Power Supply Department and Accounting Principles

The Labour Department had also taken a major initiative in two other areas. The first related to the establishment of a Power Supply Department at the Centre; the second was the formulation of certain accounting principles for ascertaining income, expenditure and profit of electrical undertaking. About creating a Public Supply Department, Ambedkar observed at the first meeting of the Policy Committee:

> Besides there are other important issues which the Committee would also have to take into consideration. They are:-
>
> 1. Whether it is necessary to establish a Power Supply Department at the Centre whose duty it would be to make a systematic survey of the available sources of power, namely, coal, petrol, alcohol and running water, etc., and to suggest ways and means of increasing generating capacity.
>
> 2. Whether it is necessary to establish a Power Research Bureau at the Centre to study problems connected with the relation between the sources of power and the machinery in order to promote the most efficient use of available power.

The initiative taken by the Labour Department subsequently led to the creation of a Power Supply Department at the Centre which has been in overall charge of electricity development in the country.

Accounting principles were seen to be a necessity both in the interest of public utilities as also of the general public. Ambedkar highlighted this issue in his opening address to the second meeting of the Policy Committee. He observed that this issue was

> related to the question of applying to electrical under takings certain accounting principles for ascertaining their income, expenditure and profits. The first question is whether the dividend of an Electricity

> Supply Understanding should or should not be related to the charges for the consumption of electricity. The second question is how to determine a reasonable dividend. On the first question, there can be very little dispute as Electricity is to be a prime necessity - of the people both for production and consumption; its price cannot be left to the will of the supplier. The whole industrial future of India would be put in great jeopardy if India could not ensure a cheap and abundant supply of electricity. The necessity of correlating dividends to charges is therefore paramount. If this was granted the necessity of enforcing rules of accounting which would give the undertaking a reasonable return but no more, and choke all holes for concealed profits, cannot be disputed.

He added:

> In pressing for the enunciation of principles of accountancy Government are not introducing any revolutionary idea but are following the lines laid down in British Legislation on Electricity contained in the London Electricity Acts of 1925 and the Electricity Supply Act of 1926.

Subsequently, the Chairman of the Central Technical Power Board drew up a Memorandum in which a set of accountancy principles were proposed for application to electricity undertakings. The Memorandum was circulated to the Provincial Governments and to Electrical Undertakings for their opinions. Because of divergence of opinion, and as a means of bridging the gulf, the Government of India proposed to appoint an Advisory Board to advise the Labour Department on the nature, extent and method of application of such principles. Alternately, this effort led to the enactment of the Indian Electricity Supply Act, 1948 to provide for the rationalisation for the production and supply of electricity, and for taking measures conducive to electrical development.

Ambedkar and his Department had indeed worked hard to evolve an Electric Power Policy through discussions in two conferences during October 1943 and February 1945. The vision and the urgency they brought to the whole process is best described in the words of Ambedkar himself in the first meeting of the Electric Power Policy Committee.

> Before I conclude may I make a few observation pointing out the significance and ultimate objective that lies behind the need for electrical development in India?
>
> It is necessary that those who are placed in charge of the subject should have the fullest realisation of its significance and its objective...I will request you to ask yourselves the question-why do we want a cheap and abundant electricity in India? The answer is that without cheap and abundant electricity no effort for the industrialization of India can succeed. This answer brings out a part of the significance of the work of this committee. Ask another question, why is industrialisation necessary?... the answer to the questions is, we want industrialisation in India as the surest means to rescue the people from the eternal cycle of poverty in which they are caught. Industrialization of India must therefore, be grappled with immediately.
>
> He added:
>
> I, therefore, hope that we shall tackle the problems connected with electricity in an earnest and in statesman-like manner thinking in terms of human life and not in terms of the competing claims of the Centre versus the Provincial Government....we have in this...post-war planning. The compelling forces of what William James called "the pungent sense of effective reality" of what poverty in India is, which the statesmen of the last war did not have.[12]

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12 B.R. Ambedkar, "Post-War Development of Electric Power in India", Presidential address in the second meeting of policy committee in Delhi, Indian Information, November 15, 1943, pp. 125-8.

CHAPTER VIII

AMBEDKAR, WATER RESOURCES AND INDIAN CONSTITUTION

In promoting multipurpose development projects, the main obstacle to be overcome was the question of jurisdiction. While the Labour Department in the Central Government had an all-India outlook both as regard the costs and benefits of these projects, the Provincial and State Governments needed much convincing to have a similar outlook. Compromises had to be made and delays were inevitable. It was fortunate that Dr. Ambedkar was expert on constitutional matters, which knowledge helped the Labour Department to evolve alternative ways within the framework of the provisions of the 1935 Act. When he was made the Chairman of the Drafting Committee of the Constituent Assembly, the country had the benefit of his knowledge and experience. This was especially useful in making provisions about water resources in the Indian Constitution. In this Chapter we examine this positive role played by Dr. Ambedkar in the light of his experience in evolving solutions agreeable to all concerned in the case of multipurpose projects.

Provision before 1935

Until 1921, the Government of India was the authority looking after the construction and management of irrigation works, generation of hydro-electric power and all water resources development in the Provinces. The Provincial Governments' Public Works Departments carried out the actual execution of the works, but the Government of India and the

Secretary of State in London exercised powers of superintendence, direction and control on all activities whether technical or administrative.[1]

The Montagu-Chelmsford Reform Act, which was the first comprehensive constitutional reform, was introduced in 1919. Under it "irrigation canal, drainage, embankment and water storage including famine relief and agriculture and forest" became a Provincial but reserve subject, i.e. a State subject but coming under the control of the Central Government where so provided by the Indian Legislation.[2]

Expenditure on irrigation was one such matter, on which the Governor in Council and the Secretary of State had direct control. Under this provision, a Provincial Government had to have prior approval of the Secretary of State on any irrigation project costing more than Rs. 50 lakhs or whenever the project materially affected the interests of more than one Province. Hydroelectric development, on the other hand cam entirely under the jurisdiction of the Provinces.

Thus, up to March 1937, the Government of India and the Secretary of State in London exercised powers of superintendence, direction and control on all large scale consumptive use of water by the Provinces of British India from the rivers in the country. The Government of India had no control on withdrawals from the rivers made by the princely States within their own territories unless these withdrawals affected the uses being made, or proposed to be made, by the Provinces. In the latter case, and whenever irrigation was extended to the States from canals in the British territory, specific agreements were entered into between the British

1 N.D. Gulathi (1972), Development of Inter-State Rivers: Law and Practice in India, New Delhi: Allied pp. 25-31.

2 W.A.J. Archbold (1926), Outline of Indian Constitution, British Period, New York, pp. 196-202.

Government and the rulers of the States. The Madras-Mysore agreement of 1892 governed irrigation developments in Mysore; the Sutlej Valley Project, a joint undertaking of a British Province and two Indian States, was governed by the terms of a tripartite agreement between the British Government and the erstwhile States of Bahawalpur and Bikaner.[3]

Provisions in the 1935 Act

Under the 1935 Act, which introduced another set of constitutional reforms, Provincial autonomy was enhanced and the Provincial Governments got exclusive powers over "Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power." The only items reserved for the Central list were "shipping and navigation on tidal waters", and for the Concurrent Legislative List, "shipping and navigation on inland waterways as regards mechanically propelled vessels and the rule of the road on such waterways; carriage of passengers and goods on inland waterways".[4]

The Central Government was thus no longer concerned with the development of irrigation. The only exception was when a Province or a Princely State took objection to some development in an adjoining Province and the dispute could not be resolved by mutual agreement; in which case, the dispute was to be referred to the Governor-General who could decide on the matter himself, refer it to a Commission specially appointed for the purpose or refer it to the Viceroy. The 1919 Act did not permit the Central Government to promote the development of water resources whether for irrigation or for hydro-electric power. Neither did the Act of 1935, which,

3 Gulathi, op. cit..,pp 26-27.
4 ibid.

however, at least permitted the Central Government to spend its revenues on matters which it felt fit and proper although they were outside its jurisdiction.

Inter-State Rivers and Constitutional Problems: 1943-46

This was the state of affairs when Ambedkar took charge of the Irrigation and Electric Power Department in July 1942. Because the 1935 Act gave exclusive power to the Provinces to control the waters of all rivers and the Central Government was not concerned with the development of irrigation, there was no office at the development of irrigation, there was no office at the Centre to look after the development of electricity in India and there was hardly any data on the production, distribution and administration of irrigation and electricity in India. At the same time, the water policy devised by the Labour Department during the post-war period visualised much greater role and participation for the Central Government than was permitted under the provisions of the 1935 Act. While the Policy Statement made it clear that it had no intention to interfere with the freedom of the Provinces to devise and execute their own plans, it considered that irrigation and hydro-electric projects on inter-State rivers which involved more than one State and which required regional development of entire river valley basins the participation of the Central Government was necessary. The 1935 Act provided that on subjects of inter-Provincial nature, an inter-Provincial Council was to be appointed for investigation and for making recommendations. It was an advisory body and had no executive power. This was a handicap in executing projects of inter-Provincial nature, which was overcome through setting up a Corporation or Authority to administer development, control and management of projects on rivers flowing through more than one State. Such an

authority however, could only be formed by an agreement of the States concerned. The Centre was better placed to promote such an agreement than the Provinces themselves. The Damodar Valley Corporation was the first such Authority set up by common agreement of the States concerned.

Ambedkar chafed under the existing arrangement, under which the Central Government had no say in matter of India's water policy. Referring to the Act of 1935 he observed that

> we have not taken sufficient account of the fact that there is no difference between railways and waterways at any rate those that flow from Province to province. On the contrary we have allowed our Constitution to make a distinction between railways and waterways. With the result that railways are treated as Central, but waterways are treated as Provincial.

The disadvantages of this error, in his view, were many and obvious. Illustrating his stand, he said:

> A Province needs electricity and wishes to utilise its water resources for the purposes but it cannot do so because the point at which water can be dammed lies in another Province with no interest in it (for various reasons), or money to finance the project and would not allow the needy to use the site. Complain as much as we like, a Province can take such an unfriendly attitude and justify it in the name of Provincial Autonomy.[5]

The reversion of the Constitution, treating water ways on the same footing as the railways was therefore needed, he argued. Till such time, however he suggested as an alternative, an independent Authority giving the Central Government a leading role and participation for development of water resources on inter-States rivers. A similar alternative

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5 BR Ambedkar (1945), "Damodar Valley Scheme: Calcutta Conference", Indian Information, February 1, 1945 pp. 97-101.

was also recommended for the development of electric power on inter-State rivers for integrated and regional development of the entire river basin. In the second meeting of the Policy Committee on Electric Power Policy on February

2, 1945 he argued that:

> Little or no objection should be raised to Central control where a Province does not desire to take on such control or wherein the interests of regional development extending beyond the boundaries of a Province, the Central intervention might be considered necessary.

For electricity as for waterways, he said, suitable schemes could be limited by Provincial boundaries and though clearly there had to be the closest cooperation and coordination between the Centre and the Provinces, it did seem advisable that the Centre should be able to step in where Central control was found necessary for regional development and where a Province did not itself wish to bring an undertaking under State control.[6]

Inter-State Rivers and Indian Constitution

This line of thinking, which led to the creation of river valley Authority, was also reflected in the framing of the new Constitution for independent India. When the draft Constitution was submitted on February 21, 1948 it was obvious that it had benefitted from the influence of Ambedkar, who was Chairman of its Drafting Committee, especially as regards independent India's water policy. The draft Constitution included articles 239-242 corresponding closely to Sections 130-134 of the Government of India Act, 1935, as adapted in 1947. These articles used the earlier phrase "water from

6 Ambedkar (1945), "Post-War Electric Power Development", Indian Information, Febraury 15, 1945.

any natural source of supply." List 1 of the Seventh Schedule (viz. Union List) to the draft Constitution, however, made a major departure from the 1935 Act and placed the development of "inter-State waterways" under the Union List, the relevant item being: "74. The development of inter-State waterways for purposes of flood control, irrigation, navigation and hydro-electric power."

On September 1, 1949, Ambedkar moved an amendment to Entry 74 in the Constituent Assembly as follows:

> 74. The regulation and development of inter-state rivers and river-valleys to the extent to which such regulation or development under the control of the Union is declared by Parliament by law to be expedient in the public interest.[7]

The new entry came to be adopted in the Constitution as Entry 56 of List 1. No amendment was proposed to Entry 20 in the State List in the draft Constitution and it came to be adopted finally as Entry 17 of List II which read:

> Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to the provisions of Entry 56 of List I.

On September 9, 1949, Ambedkar moved another amendment to insert draft article 242 A as follows, in place of draft articles 239-242:

> "Adjudication of disputes relating to waters of inter - State rivers or river valleys".
>
> 242 A (1) Parliament may by law provide for the adjudication of any dispute or complaint with respect to the use, distribution or control of the water of, or in any inter-State river or river valley.

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7 See Constitutional Assembly Debates, Vol. 9 p. 830.

In proposing this amendment, he referred to various Corporations being created (like the Damodar Valley Corporation set up by Act No. XIV of 1948) and the need, therefore of a body to deal with such disputes as might arise from the activities of such corporations. He said that "the original draft or proposal was too hide-bound or too stereotyped to allow any elastic action that may be necessary ....Consequently I am now proposing this new article which leaves it to Parliament to make laws for the settlement of these disputes."

This draft article came to be adopted as Article 262. In accordance with this provision, Parliament enacted the Inter-State Water Disputes Act, 1956 and the River Boards Act, 1956. The former provides, in the words of its preamble "for the adjudication of disputes relating to the waters of inter-State rivers and river valleys." The River Boards Act, in turn, provides "for the establishment of River Boards for the regulation and development of inter-State rivers and river valleys", in terms of Entry 56.

CHAPTER IX

AMBEDKAR AND THE FOUNDATION OF INDIA'S WATER POLICY

Dr. B.R. Ambedkar is widely known for his contributions to the making of modern India. His social and political efforts for the uplift of socially deprived classes, in the making of India's Constitution and his scholarly solution to the vital issues of his times helped decisively in shaping the social, political and economic character of India at a crucial period of its history. Equally important but less known were his contributions in the making of India's development policies. As a Cabinet Member during 1942-46, he was instrumental in laying the foundation of India's water and electric power policy. In the early 1940s, which were a crucial period in the evolution and adoption of economic planning in India, he initiated and gave momentum and a definite shape to the policy and planning of its water and electrical power development.

The Reconstruction Committee of the Council, Government of India, had suggested that only an all India policy could give the best results from irrigation, electrical and industrial development. Development of irrigation and electric power was now considered a prerequisite for developing agriculture and industry and received high priority in the long-term objective of the Plan. Ambedkar's job as President of the Irrigation and Electric Power Committee was, however difficult because the Act of 1935 had brought both these subjects fully under the jurisdiction of the Provincial Governments. This limitation needed to be overcome, by means of

cooperation, adjustment and agreements with the Provincial and State Governments. This was not easy because the creation of alternative executive authority of River Valley Corporations and the adoption of regional and multipurpose approach demanded not only whole hearted cooperation from the Provinces but also surrender of their autonomy in some areas. Ambedkar succeeded in persuading the Provinces to agree to an all-India perspective for the planned development of their water resources, to a great extent on account of his sterling sincerity and great scholarship. He pointed out to the Provinces that the problems of inter-State rivers were of interest not only to the several Provinces and States through which they passed but were a close concern of the development of India as a whole.

Underlying emerging India's policy perspective on irrigation and electricity development was Ambedkar's own perspective of economic development and thinking on political issues. As early as 1918, he had applied his mind to the problems of the Indian economy. It was his considered view that the root cause of economic backwardness was the parent evil of maladjustment in India's Social economy, which was characterised by scarcity of capital in agriculture but at the same time with existence of disproportionately high labour force. This had depressed the land and labour productivity. Agricultural productivity could be raised by simultaneously expanding capital investment and reducing idle labour by transferring it to non-agricultural activities. Industrialisation would reduce the pressure on land; it would also increase the supply of capital for investment. Improved labour productivity would ensure this, resulting in improvement in the productivity of land. The State had to actively ensure supply of capital both to industry and agriculture and their planned development.

Ambedkar highlighted this development strategy for the post war plan of economic development of 1943-46. The objectives and sectoral priorities of this Plan showed significant influence of Ambedkar's thinking. While agriculture would remain India's primary sector, industry had to be brought up to a certain level though its intensive development. Infrastructure for both industrial and agricultural development were of high priority. Irrigation and cheap and abundant electricity was one such infrastructural factor. It was for the first time that the Centre had begun to consider planning for water, power and mineral resources on a comprehensive all-India scale. Irrigation and electric power being a Provincial subject there was not much at the Centre by way of administrative and information base. The Labour Department had to begin virtually from scratch. The Central Government set up a separate Policy Committee to formulate the irrigation and electric power policy with Ambedkar as its President. He was also closely associated with the Official Committee in the Department of Labour that did the planning. By virtue of his position in these committees, he played a leading role in helping his Department to formulate the policy and action plan for the optimal development of the water resources of the country.

The Policy Committee developed a comprehensive Policy Statement which included measures for the development of irrigation (surface and underground), internal navigation and electrical power development. It highlighted the need for the expansion of irrigation (both surface and underground), internal navigation and hydro-electric power for the development of agriculture as well as industry. It identified a greater role for the Central Government, particularly for arranging the supply of necessary material, providing technical support and in some cases financial assistance. Several project proposals involving

regional development of the Provinces were invited for scrutiny. Such scrutiny and follow-up, however, required the presence of a technical expert body at the Centre. The Irrigation Adviser and the Central Board of Irrigation did not have adequate expertise nor did their mandate permit them to take on a new task. To fill this gap, the Labour Department established two high-power technical organisations, namely the Central Technical Power Board (CTBP) in November 1944, and the Central Waterways, Irrigation and Navigation Commission (CWINC) on April 5, 1945. The CTPB was to collect data, conduct surveys and prepare schemes for electrical development in consultation with Provincial and State Governments for the accepted policy of encouraging planning and pressing forward the widespread development of electricity supply throughout the country. The CWINC, which was the precursor of the present day Central Water Commission was to act as a Central fact-finding planning and coordinating organisation, conducting surveys and investigation with a view to secure planned utilisation of water resources of the country as a whole in consultation with the Provinces.

In January 1945, addressing the First Conference on the Damodar Valley Scheme. Ambedkar mentioned the purpose of these technical expert bodies at the Centre. He said:

> The objects which have led to the setting up of two organisations viz Central Waterways, Irrigation, Navigation Commission and the Central Technical Power Board are to advise the Provinces and States on how the water resources can be best utilised and how the projects can be made to serve purposes other than irrigation.

The creation of these bodies at the Centre was, however, not enough. The functioning of these bodies demands greater participation of the Labour

Department in the development of irrigation, navigation and hydro-electric power of the Provinces than was permit-ted under the 1935 Act.

The 1935 Act virtually debarred the Central Government from assuming executive authority over Provincial subjects and from intervening in the development efforts even on inter-State river valley projects. The Labour Department under Ambedkar's guidance developed a new instrument of executive authority for the control and management of projects on the rivers flowing through more than on State in the form of River Valley Authority or Corporation with the joint partnership of the Centre and the Provincial and State Governments concerned.

The Damodar Valley Corporation was the first such Authority, which was established to control and manage the development of the water of river Damodar which flows through the States of Bihar and Bengal. Having developed the concept of an Authority to manage the affairs of inter-State rivers and pave the way for more active participation of the Central Government, the Labour Department also adopted the approach of developing the water resources of the rivers as multipurpose development of the river valley basin as a whole. There were three new elements to this new approach. These were: (1) The marked shift from single purpose use to multipurpose use of water for irrigation, navigation, industrial and domestic purpose and hydro-electric power, wherever possible. (2) The development of river valley basin as a whole or drainage and not the delta alone. (3) The essential link in planning between the multipurpose use of water resources and social, economic and ecological development. This link was ensured through coordination between the River Valley Authority and the Provincial, State and local Governments.

Having established technical bodies at the Centre and the concept of an "Executive authority" in the

form of River Valley Authority or corporation and for the regional and multipurpose development of inter-State rivers, the next step was to address a detailed questionnaire to the Provinces and States about the projects they proposed. Among the proposals sent to the Department for scrutiny and study, such as the Damodar Mahanadi. Sone and Kosi, the Damodar Valley Project became the first multipurpose scheme. Its implementation was carried out by a River Valley Authority, after the project was hammered out at three inter-Provincial conferences. Agreement was obtained from the Provinces on a coordinated multipurpose development of the Damodar, a preliminary survey was initiated, a Preliminary Memorandum of multipurpose scheme prepared, and a full-fledged project report developed on the Maithon and Tilaya dams, which was approved by an American technical mission.

Encouraged by the success of the Damodar Valley Project, the Department extended the concept of multipurpose development to the Mahanadi. Responding to a request of the Orissa Government, a conference was organised in November 1945 to explore the possibilities, and it was decided to have a preliminary survey about the project. A survey done by A.N. Khosla, Chairman of CWINC, suggested clear scope for construction of dams at Hirakud, Niraj and Tikarapara. Soon thereafter, the foundation stone was laid by the Governor of Orissa in March 1946 for the multipurpose project. Similar steps were taken for the rivers Sone and Kosi.

In similar manner, Ambedkar brought to bear his political sagacity and ambitions for India's economic development on the new policy for electric power. To enhance electric power development the Labour Department prepared a policy paper. It suggested that subject to efficient working, electricity was to be made a State or quasi-state enterprise, but entry for the private sector was not ruled out. Further, electric

power development was to be carried out on a regional basis. An expert technical body, namely the Central Technical Power Board was set up at the Centre to plan and develop electric power in the country. A scheme was also prepared to send Indian engineers abroad for commercial, administrative and technical training. A proposal was initiated to set up Power Supply Department at the Centre, steps were taken to acquire additional heavy power equipment for key electrical undertakings in the country, and the accounting principles laid down for electricity undertakings. The initiatives subsequently led to the establishment of a Power Supply Department at the Centre and the enactment of the Electricity Act (Supply) of 1948 after independence. The formulation of post-war irrigation and electric power policy and its planning were a joint effort by the Labour Department. While comprehensive technical details were efficiently worked out by the technical experts, ticklish political constitutional and economic questions were resolved by Ambedkar. In formulating the water policy, the main issues for which Ambedkar had to provide an answer, in agreement with the Provinces and the States, included:

(a) The justification to have an all-India Policy for irrigation and electric power development;

(b) Justification for the need for active participation of the Central Government in the development of irrigation and electric power projects on inter-State rivers;

(c) Identification, by the Labour Department, of the areas or projects for its participation, and the nature of intervention;

(d) Development of the instrument of executive authority to deal with the projects on inter-State rivers to overcome limitations posed by the Constitution Act of 1935; and

(e) Adoption of an appropriate development approach of water resource development.

Ambedkar with his political status, immense concerns and high scholarship was successful in persuading the Provinces to have an all-India policy, to develop the instrument of River Valley Authority to manage the projects on inter-State rives for multipurpose development and with active participation of the Central Government.

The new water policy was also influenced by Ambedkar's humanistic outlook and his immense concern for the poor and underprivileged. He rarely allowed the planners to forget the significance of irrigation and electric power development for the poor. While pointing out the ultimate objective behind the irrigation and electric power policy, he observed that the planner should be guided by the right spirit and determination to arrive at the best solution and to open a way to the inauguration of a new water policy for a regime of prosperity for the poverty-stricken millions of this country. To achieve this, he said, there was an absolute necessity to ensure that the benefits of the irrigation projects filtered right down to the grassroots i.e. every one living in the valley and some of those in the vicinity. All had to have their share in the prosperity which the project should bring. Before he laid down office as a Cabinet Minister in June 1946, he saw to it that the Resettlement Policy for the rehabilitation of displaced cultivators and non-cultivating households in the submerged areas of Damodar Valley was finalised. The resettlement policy was framed on April 22, 1946 by the Labour Department and was approved and agreed in the third Inter-Provincial Conference held the next day. It provided for compensation in kind, as far as possible-land for land in the command area of the Damodar project, with adequate housing and other amenities. This

policy subsequently formed the base for the steps undertaken for resettlement by the Provincial Governments.

Ambedkar thus left the stamp of his scientific and rational outlook, his profound scholarship and essential humanity on emerging India's water policy. Recognising this significant contribution of Ambedkar and the team he led in nation-building, C.M. Bhabha, a Cabinet Member who took over from him in July 1946, said:

> We had moved overnight from the rut of antiquated ideas to the modern conception of waterway development and taken their step towards a comprehensive planning of resource development in river valley. I attached a particular importance to the first conference on Damodar because the torch lighted here for the first time has been since passed on to the Mahanadi, the Kosi and Sone river valley development schemes...We owe a debt of gratitude to all those who sponsored and piloted the....concept of multipurpose and regional development.

APPENDIX 1.1

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APPENDIX II.1

EXTRACTS FROM THE MEMORANDUM PREPARED BY THE LABOUR DEPARTMENT ON SONE RIVER VALLEY AUTHORITY, MARCH 10, 1945

a. That the Central Government, Provincial Governments and States concerned should agree that the prospects of multi-purpose development in the Sone Valley are such as to make it worthwhile to proceed with the necessary preliminary enquiries with a view to setting up an authority.

b. That decisions should be taken as to the best manner of carrying forward the necessary technical enquiries.

c. That the Central Government, Provincial Governments and States should in accepting the need for further enquiry recognise that if as a result of that further enquiry decisions are taken to set up an authority:

(i) Such authority must be given by Provinces and States full authority over the waters of the Sone and its tributaries.

(ii) Provinces and States much agree that such authority should have the sole right to generate electricity (except for nursery schemes) in the area covered by the authority.

(iii) Provinces and States must agree not to abstract water without the approval of the authority.

(iv) Those Provinces and States in which dam sites are situated must agree to the submergence of lands on such terms as may be arranged.

If a Corporation is to be set up under the Constitution as it stands in India to administer the development of a river, it is necessary that corporation should be set up by

Central legislation but that the Provinces and States concerned should give by agreement or by contract such executive authority as vests in them for the erection of dams on and otherwise dealing with the waters of the river.

Where, as in the case of the Sone, a river passes through several Provinces and States and the benefits to be derived from multi-purpose development can accrue to various Provinces and States, it is necessary that there should be some Authority deriving its power from Government but provided with the necessary flexibility and initiative adequately to develop the resources of the river. The necessity of consulting all Governments before any particular step is taken must be eliminated to the extent to which Provinces and States are prepared to do so. The Authority would, however, be empowered only to do those things specifically permitted in the contracts with the Provinces and States. It seems clear that the power to be given to the Authority would be the power to plan and develop the future of the river and that the planning of the future of the river basin and of the areas to be benefited by the development scheme must remain the responsibility of the Provinces and States concerned. If this is so then it is necessary that from the earliest possible moment (that is, from the first decision to proceed with an enquiry). Provinces should arrange to plan and develop the requirements of the area to develop load for the authority.

At the same time the Authority, if it is to achieve efficient development must have its rights protected. It is no use setting up an authority to develop the hydro-electric power of a large river if Provinces and States are going to allow the setting up of other electric supply organsiations in the area economically covered by the proposed development (other than nursery schemes fitting in with the power organisation of the Authority) except in agreement with the Authority. Further it is necessary that the Authority must be given the right to seek its power anywhere within economic transmission distance.

Again, though such matters as the plans for industrialisation, social well-being, reforestation relocation of population, roads and schools, provision of extra

irrigation whether by gravity or by pumping, cooperative develop-ment, fertiliser and farm demonstration programmes, and the setting up of Provincial and Municipal Planning Boards must necessarily be for the Provinces and States concerned, the Authority has a clear interest in such developments and may be allowed to assist with its advice the coordination and development of plans. There must be the fullest cooperation between the Authority and the Provinces, States, local bodies and with the people in the areas to be developed if the Authority is to be able to achieve the maximum good of which it is capable.

d. It has been said above that the Authority must have flexibility. The Authority will engage to supply a quantity of firm power and possibly also a quantity of irrigation water. Hydro-electric power production and transmission must remain much affected by weather conditions and storms may easily upset the most carefully framed estimates for maintenance of transmission lines. It is essential that the Authority has both the finance and the powers to deal with all matters that may arise in regard to power production and transmission. Limits must be put on their powers of expenditure but the limits must be widely framed. The Authority cannot be subject to the strict budget control of either the Centre, the Provinces or the States. It will have to be trusted and the control must rest in the power to appoint Directors and to discharge them and the power to refuse further finance if the Governments were not satisfied. There will have to organised joint financing but that must be so devised that the Authority once it is set up is not deprived of the finance that it requires provided it is operating satisfactorily for the purposes which have been put in its charge.

Provinces and States must therefore realise that if an Authority is set up that Authority must be given certain of their powers and responsibilities if it is successfully to operate and must be given a measure of financial independence.

APPENDIX II.2

LETTER OF GOVERNOR, WEST BENGAL TO THE VICEROY REGARDING WATER PROBLEM OF WEST BENGAL

Government House
Calcutta
7 September 1944

My dear Lord Wavell,

I write about the river problems of Bengal. Bengal is essentially a 'water' Province which is cut through by two of the mightiest river systems in India, the Ganges and the Brahamputra each with discharges of astronomical proportion in the monsoon period. The water problem of this Province is vitally connected not only with its agricultural development but also with public health and particularly the incidence of malaria. I find that this important subject has never been tackled in Bengal in a big way, and the control and management of water has practically received no attention at all, except by way of relatively small piecemeal schemes.

2. I have been going into this problem lately and have come to the conclusion that very considerable improvements in irrigation, drainage and river control are essential for improvement in agriculture in Bengal and also for getting at the root of the grave problem of malaria. My mind reacts however against our undertaking any irrigation schemes of real consequence until we have had a thorough high level survey of the whole problem by experts in the various branches of irrigation, drainage and river control. I fully realise that we cannot tackle the problem (i.e. do any actual work on the ground) on a large scale until after the war when the necessary technicians, materials and transport are available. Moreover in Bengal quite inadequate attention has so far been paid to keeping the mass of hydrological data that will have to be

subjected to close study before any serious examination of the water problems in Bengal can be taken up. I have induced my ministry to start at once on the methodical collection of such data, and necessary action is being taken in this direction.

3. I expect that there are other Provinces besides Bengal that may be in somewhat the same situation-although I would believe that no other Province has such complicated 'water' problems as Bengal. In order to exercise economy in the employment of high-level experts in irrigation, drainage and river control, you may well believe that the Government of India should survey the field to be covered, and, after consultation with the Provinces most concerned, endeavour to obtain the advice of one or more really high level experts in these problems, probably from overseas.

4. I would be glad to know if you agree with my paragraph 3 above-or if you believe that we in Bengal should go ahead, independently of the rest of India in an endeavour to get a really high level man or men from, say the United States. I assume that there is no one in India who could advise us on the highest level.

5. I have discussed this subject with my Ministers concerned and they are in agreement with my approach to you on the above lines.

I am,
Yours Sincerely,
R.G. Casey.

His Excellency Field Marshal the Right Hon'ble
Viscount Wavell, GCB, GMSI, GMIE, CMG, MC
Viceroy and Governor-General of India.

APPENDIX II.3

LETTER FROM THE VICEROY TO THE GOVERNOR OF WEST BENGAL ABOUT DAMODAR VALLEY PROJECT

I am afraid it has taken me a long time to reply to your letters of the 7th and 20th of September mainly because we had these and similar problems under examination here and I wanted to get some way along that examination before replying.

2. It seems to me most important that despite constitutional difficulties we should have a wide approach on a regional basis to waterways problems covering more than one Province. Waterways problems, as you point out, are vitally connected with the development of the country and in many cases are of vital importance not only to the larger Provinces but also to smaller Provinces and Stages- and these smaller Provinces may not be able to afford the necessary expert staff.

3. I agree entirely with what you say in para 2 of your letter of the 7th. The complicated water problems of the various rivers must be considered for each river as a whole but still require the expert advice of experts in irrigation. Drainage and river control and I feel with you that it is important that we should economise in the employment of high level experts. My Government have had the matter under consideration here and have decided to address Provinces on a proposal to form a Central Waterways and Irrigation Board. The Board will link in with the Central Technical Power Board on the one side and on the other with a proposal under consideration for a Land Utilisation Board. I understand the proposal has been considered informally by the Central Board

of Irrigation at their recent meeting and they are in general agreement. I feel that we should try to make this Central Waterways and Irrigation Board an organisation available to advise Provinces on all matters connected with drainage and river control, and, when so required by Provinces on irrigation also. Whether the Waterways Member on the Board should be imported from abroad is a matter on which my Government will consult Provinces. There are some experts who feel that our own engineers in India know more about waterways problems than others and that if a high ranking engineer knowing our Indian waterways is placed on special duty in this regard, he may be able to do more than would be achieved by the importation of an officer unversed in Indian rivers.

4. I recognise that the Board will require the full assistance of all Research Institutes working in Provinces and all statistical data that can be collected by Provinces and I, therefore, welcome the decision you have taken to arrange for the hydrological collection of such data. As you know the Centre has an Indian Waterways Research Institute at Poona (at present in charge of Inglis) and it is intended that the Waterways Member, though not himself, of course, being the Director should supervise the working of this Research Station and should make very full use of it in regard to any investigations that he was making and he should be available to advise Provinces if they so require, on the data to be collected.

5. I agree with you also as to the importance, in dealing with waterways, of paying adequate attention to malaria problems. The proposed Board includes provision for part time members and I am sure that it would be necessary when considering any waterway problem to have associated with the Board as a part-time member an expert on malariology.

6. As a start to the general line of approach we are contemplating, my Government have already had under consideration problems connected with the Damodar and the Sone. You will probably have seen the letter they have written to the Government of Bengal regarding the Damodar, and they are proposing to write to Bihar and the UP and other States concerned regarding regional approach in regard to the Sone. In all such cases there must be agreement between the Provinces and States concerned, and the Centre will do whatever is possible to promote such agreement. In some cases it may be found advisable that the executive authority should be vested in a Corporation or other body and in such cases, if this seemed the appropriate course, the Centre would be prepared to consider becoming partners with the Provinces in the enterprise.

7. I hope that you will agree with the method of approach that we are making here to the problem and that I can rely on your assistance in securing a wider angle of approach than is possible on a merely Provincial basis. If so perhaps you will consider it unnecessary for Bengal itself to import a special Waterways expert. I shall, of course, be grateful for any comments that you make and would pay the closest attention to them.

Yours Sincerely,

October, 1944 (H.E.)
The Viceroy

APPENDIX II.4

LETTER BY SECRETARY, LABOUR DEPARTMENT TO THE PROVINCIAL GOVERNMENTS REGARDING THE ESTABLISHMENT OF CWINC

Government of India
Department of Labour

No. DW/IRI/334 New Delhi
8th December , 1944

From
The Hon'ble Mr. H.C Prior
CSI, CIE LCS
Secretary to Government of India

To
All Provincial Governments,

Sir,

I am directed to address you regarding the proposal of the Government of India to establish a Central Waterways and Irrigation Commission with headquarters at Delhi and with composition, responsibilities and duties as indicated in the annexure to this letter.

2. It will be recalled that there was in the Government of India a Post of Inspector General of Irrigation till 1923. That post was converted into a post of Consulting Engineer and the latter post was abolished on the 31st March 1932. In that year it was felt that the retention of the post of Consulting Engineer was unnecessary as the Centre would not have any considerable funds available for development in the Centrally Administered areas, and the Provinces also would mainly be engaged on maintenance and there was no real need for the Centre to maintain an advisory body in connection with problems arising out of management and maintenance of existing

works. It was, however, at that time the view of the Central Government that it might become necessary again to revive the post when large irrigation works came under consideration and that no Central Government in India whether federal or otherwise could remain indifferent to the success or failure of large irrigation works.

3. Recently the establishment of an advisory body at the Centre has again been under consideration. The Central Board of Irrigation has strongly advised the appointment of a Consulting Engineer for Irrigation, and in November 1943 passed the following resolution.

The Board has again given consideration to the proposal for reappointment of the Consulting Engineer to the Government of India and considers that the resources of the waterways of India will not be put to the best advantage until such appointment is made.

The subject of waterways comprises

(1) Irrigation
(2) River Control
(3) Conservation and control of flood water
(4) Hydro-electric Development
(5) Soil conservation
(6) Tidal Problems
(7) Navigation

In many cases these subjects, in reference to any particular waterway, concern more than one Province or State. Unilateral action by a Province or State concerning its portion of a waterway may have an adverse effect on neighbouring Provinces or States. To make the fullest and most economical use of waterways, the Board considers that one Central technical authority should exist who would assemble and collate the necessary data for the information and use of the Government of India and of the several Provinces and States concerned.

The Board considers that research into matters of water ways will become of more and more importance as development in India takes place.

Post-war development is now considered one of the most vital matters before the Governments of the country. The broadening of the Electrical Industry and the development of

Hydro-electric Power are inextricably connected with development of industries and food production. The expansion of irrigation, the conservation of soil and the control of floods are directly connected with the food supply of the country and the general contentment and prosperity of the people. During the reconstruction period navigation may play an important part in alleviating transport difficulties.

Because of the urgency and undoubted importance of the postwar aspect, the Board would again urge that the Central Irrigation and Hydrodynamic Research Station at Poona be made permanent and that the appointment of a Consulting Engineer to the Government of India for Waterways be effected at a very early date.

Again at their meeting recently held in Simla in 1944, the Board Passed the following resolution:

(i) That the attention of the Government of India be invited to item No. XVI of the Board meeting dated November 1943.

(ii) The Board notes with satisfaction that the Waterways Experiment Station has been made permanent, and that the post of Consulting Engineer for Waterways has been sanctioned.

(iii) The Board would impress upon the Government of India the urgent necessity of proceeding to fill the post by the appointment of a suitable Chief Engineer.

(iv) The Board is further of the opinion that recent developments will render it necessary to provide the Consulting Engineer for Waterways with an adequate staff to carry out the functions with which he will be entrusted.

4. The Government in India have carefully considered the proposal of the Central Board of Irrigation and they feel that there is a real need for an expert body capable of advising both the Government of India and, when so required, Provinces in regard to waterways and irrigation problems and able in so far as Provincial Autonomy permits to secure a measure of coordination in regard to waterways and irrigation throughout the country. Increased attention is being, and must clearly be, paid in this country of large waterways to the management of individual waterways as a whole, to the coordination of

waterways policy as between Provinces, to the discussion and if possible settlement of principle governing rights in water and to the preparation of hydrological data and other statistical information on uniform lines. These are all matters on which a technically strong advisory body at the Centre can, in the opinion of the Central Government, perform useful functions, while it would also seem that such a body might on occasion as required be able to give useful advice to Provinces on technical matters, to help in the settlement by agreement of and disputes that might arise, and to advise on the terms of any agreement under consideration between Provinces to ensure that they are clear and unequivocal. The Government of India feel that it is advisable that they should set up a Central Waterways and Irrigation Commission with duties, responsibilities and composition as indicated in the annexure to this letter, and the purpose of this letter is to obtain the views of Provincial Governments on this proposal. The whole cost of the Commission (except where any specific additional expenditure was incurred at the request of a Province) would be borne by the Government of India.

5. It is recognised that many of the problems which form part of the proposed duties and responsibilities of the Commission fall within the Provincial legislative and executive sphere, and there is, of course, no intention that the Commission should usurp or in any way encroach upon the duties and responsibilities of Provinces. It is intended that the Commission shall be purely a fact-finding and advisory body, composed of expert members with competent and sufficient staff able to devote themselves whole-time (or in some cases part-time) to the study of India's waterways and irrigation problems. The Commission would coordinate information and would be available to study and help in treating waterways problems as a whole and to advise when required.

6. It is considered essential that the chairman should be an officer with experience of Indian waterways and irrigation and it is proposed that the Waterways and Irrigation Commissioner to the Government of India (whom it is hoped to appoint shortly even before the setting up of the Commission) should be appointed as

Chairman. The question whether (if the Commission is established) it is advisable that the Waterways member should be recruited in India or from abroad is one on which the views of Provinces are particularly invited. It may be considered that Indian engineers themselves know more about waterways problems and how to handle them, than those whose experience has been gained in other countries while on the other hand it may be held that the introduction of ex-India experience to a Commission on which most members will have Indian experience may have advantages by familiarising engineers in India with experience of what has proved successful elsewhere. There can be little doubt that if in fact such experience is necessary it can be best secured by having an expert with that experience among us rather than by short visits of our engineers to other countries.

7. It is not intended that this Commission should take the place of the Central Board of Irrigation-The Board will have to remain in being as the body through which the Irrigation experts of Provincial Governments are able to pool experience and to express views, after consultation together on matters of interest to all. This will remain a most useful function. But the Board by the very nature of its composition cannot be a body in permanent provision and cannot meet often, while the proposed Commission would be permanently available with time to devote its attention without interruption to the problem placed before it. It would probably be found advisable that the Offices of the Central Board and the Commission should work in close association and the manner in which this could be arranged would be a matter for arrangement between the President of the Board and the Chairman of the Commission.

8. The Government of India hope that your Government will agree with them that the establishment of a Central Waterways and Irrigation Commission with duties and responsibilities as proposed will be a useful development and I am to request that the general views of your Government on the proposal may be sent to the Government of India not later than the 20th December- and in particular on the two points.

a. Whether your Government welcomes the proposal;
b. Whether your Government would advise that the Waterways Member should be recruited in India or abroad.

I have the honour to be
Sir,
Your most obedient servant.

H.C. Prior
Secretary to the Government of India

APPENDIX II.5

LETTER BY SECRETARY, LABOUR DEPARTMENT TO THE SECRETARY, GOVERNMENT OF U.P., C.P. AND BIHAR REGARDING REGIONAL CONTROL AND MANAGEMENT OF RIVERS IN INDIA

Government of India
Department of Labour

New Delhi
No.: DW/IRI/336 8th December 1944

From
The Hon'ble Mr. HC Prior, C.S.I., C.I.E., I.C.S.
Secretary to the Government of India.

To
The Secretary to the Government of U.P.
C.P. Public Works Department
Regional Control and Management
Bihar

Sir,

I am directed to refer to this Department letter No. DW/IRI/336 dated 8th December 1944, which discussed certain general matters relating to the regional control and management of rivers in India. The present letter suggests regional consideration of problems relating to the Sone river.

2. The Government of India's attention has recently been drawn forcefully to the potentialities of the Sone. Attention was recently drawn to the possibilities of this river by Mr. A.P. Watal, new Chief Engineer, Project of United Provinces, and it has also been visited and noted by Sir William Stampe (a copy of extracts from his notes is enclosed). It will be accepted that the potentialities of a

multiple purpose river management scheme on the Sone are large and include possibilities relating to:

a. Increased supplies of water for irrigation by the Sone canals.

b. A perennial hydel power plant providing energy over an area which according to Sir William Stampe might extend to 250 miles, but which according to other expert opinion would probably not extend more than 175 miles;

c. Increased irrigation by utilisation of such power for pumping from tube wells or from rivers and increased fertility by dowat ring in waterlogged areas;

d. Provision of cheap power for industrial development and for other requirements of town and country;

e. Improved supplies of water for navigation on the Ganges;

f. Improved flood control.

The possibilities are immense, but before it is possible to visualise whether those possibilities can be turned into facts, it is necessary that a detailed enquiry into the project should be made and careful preliminary plans and estimates framed.

3. This preliminary enquiry will have to cover two different aspects:

(i) The potentialities of the project itself, that is sites for dams, capacity of dams, hydrological data from which it will be possible to deduce the amount of water and the amount of power that can be available at varying expenditure;

(ii) Load surveys that is probable demand both for power and for water.

As regards the enquiry under (ii), it will be essential that all possible assistance should be given by Provinces with their own resources and that in anticipation of the possible pushing forward of this scheme, Provinces should consider whether it is not advisable for them to develop small pumping dewatering or minor industrial loads (on an experimental basis whether by the use of diesel power or otherwise) which could be taken over by the main

power scheme of the Sone valley project as soon as it comes into being. If efforts are made consistently to develop small power projects on these lines, there is an increased chance of any regional multipurpose scheme proving a financial possibility.

4. The project appears to the Government of India to be one which is essentially suitable for regional development. The dams must be situated in the United Provinces and the areas submerged would be in the United Provinces or in Rewa State. The direct benefit would accrue not only to the United Provinces and Bihar, but also to the Central Provinces and Chaughhakar, Korea, Surauja, Jashpur and Maihar States, while the improvement of navigation on the Ganges would be likely to be of benefit to Bengal and the whole of India. The project is a large one and the efficient development of a river such as the Sone will not only provide numerous direct beenfits to adjacent Provinces and States but its success will be a valuable lesson of all-India importance justifying the Centre taking an interest in the development of the project. The Central Government is therefore willing to consider sympathetically any proposal that they should become partners in the Sone Valley project provided when all the details of the scheme have been worked out they are satisfied on the recommendation of technical authorities that the scheme proposal is fundamentally sound financially and technically and that there are reasonable prospects of payment of interest at reasonable rates and the repayment of capital within a period considered suitable for large projects of this kind.

It is impossible for the Central Government to say that the Sone Valley project is of all projects of India needing regional development that one that should necessarily be taken up first or that one in the development of which it is most important that the Centre itself should become a partner. They consider however that, in view of the importance of advancing further forward in the matter of regional development of multipurpose river management schemes and of the chances of a satisfactory scheme for the Sone Valley being developed, it is advisable that a start should be made forthwith with the technical examination

of the project and are themselves prepared to help in providing for that examination.

5. They have, therefore, prepared a rough scheme for a Sone Valley Corporation a copy of which is enclosed. They propose that this rough scheme should be discussed at a meeting to be held in Delhi in January with a view to the taking of the following steps:

1. All Governments concerned should enter into an initial agreement that they will set up a Sone Valley Corporation (somewhat on the lines of the scheme enclosed) provided they are satisfied after consideration of the reports of the Committees (as in (2) belong) that the project is technically sound and financially practicable. The terms of the agreement would be liable to such modification as might seem suitable on a consideration of these reports.

2. If and when that initial agreement is signed, there should be set up by the Centre an ad hoc enquiring committee to carry out such preliminary investigations as may be necessary whose report should be considered by the Central Technical Power Board and, if formed by the Central Technical Power Board and, if formed by the Central Waterways and Irrigation Board with a view to submission of a joint report.

3. If the reports are favourable the framing of a final scheme by the Centre in consolation with the Provinces and States concerned. Such scheme should provide that the Corporation should be set up Central Legislation and should lay down the terms of agreement to be entered into by the Provinces and States with that corporation and the extent to which Provincial and State rights should be handed over to that Corporation.

6. If Provinces approve this proposal the Centre is prepared to provide the necessary staff for the ad hoc enquiring committee and themselves to pay the full cost of any expenditure incurred on that committee by the employment of officers already employed by the Government of India and half the cost of any special expenditure that might have to be incurred on the

appointment of addition staff-the other half of the cost of the expenditure being divided between Provinces and States concerned.

7. I am to request that your Government would in reply deal generally with the matters discussed in this letter and in particular with the following points:

a. Whether your Government is generally in favour of investigating the possibilities of a S.V.C.
b. Whether they are prepared to send a representative to attend a meeting in the matter on some date in the latter half of January.
c. Whether they have any suggestions to make for altering the method proposed for approach to the problem.

I have the honour to be,
Sir,
Your most obedient servant,
H.C. Prior
Secretary to the Government of India

APPENDIX IV. 1

CHRONOLOGICAL ACCOUNT OF THE PROCESS OF ESTABLISHMENT OF CENTRAL WATER COMMISSION: JANUARY 8, 1944-April 5, 1993

1. January 8, 1944	Reconstruction Committee of the Council, in its 6th meeting decided to appoint "Development Officer" for post-war development of Irrigation and Hydro Power.
2. January 22, 1944	In the Reconstruction Committee of the Council's meeting Labour Department proposed to appoint a Consulting Engineer for Irrigation and Power.
3. March 7, 1944	Dr. Ambedkar approved the appointment of Hydro-Electrical Engineer of Tennessee Valley Authority, USA.
4. March 15, 1944	Dr. Ambedkar proposed selection of Consulting Engineer for Irrigation from within the country and not from outside as was suggested by some in the Labour Department.
5. August 8, 1944	The proposal to appoint two Consulting Engineers onefor Irrigation and other for Waterways was dropped. Instead the Labour Department proposed the setting up of "Central Irrigation and Waterways Advisory Board."
6. September 9, 1944	Dr. Ambedkar approved the proposal with the remark, "I agree -The only remark I have to make is whether it would not cause considerable delay if we were to consult the Provinces

	now. Can we not consult them at a later stage?"
7. September 9, 1944	The proposal was sent to Finance Department for financial approval.
8. November 11, 1944	The Finance Department approved Central assistance to the Board.
9. November 14, 1944	Dr. Ambedkar approved the appointment of Rai Bahadur Khosla as Consulting Engineer for Irrigation with the instruction that the Officer would take over as the Chairman of the Board when it was constituted.
10. November 22, 1944	The First Draft of the proposed Commission was finalised in the inter departmental meeting. It was also decided that the new name should be the "Central Waterways Irrigation and Navigation Commission".
11. December 7, 1944	Dr. Ambedkar approved the Draft letter to the Provinces to invite their opinion and approval.
12. December 8, 1944	Letter to all Provinces regarding setting up of Central Waterways. Irrigation and Navigation Commission was sent by the Labour Department.
13. February 2, 1945	Nine out of eleven Provinces and several States welcomed the proposal for the formation of the Commission. The only two Provinces which raised some objections were Madras and Bengal. The Labour Department decided to set up the commission on the basis that they had the concurrence of the majority of the provinces in the country.

14. February 27, 1945	A.N. Khosla assumed charge as Consulting Engineer and Water ways Commissioner to Government of India in the Labour Department.
15. March 22, 1945	Dr. Ambedkar approved the Draft Resolution to set up the CWINC.
16. April 2, 1945	Dr. Ambedkar approved the Draft Resolution for final decision by the Viceroy.
17. April 4, 1945	The Viceroy approved the Resolution to constitute a Commission.
18. April 5, 1945	A Resolution to constitute a Central Waterways, Irrigation and Navigation Commission was issued.
19. August 8, 1945	The Labour Department prepared the organisational set up of CWINC
20. September 3, 1945	Dr. Ambedkar approved the organisational set up of CWINC.
21. September 5, 1945	The organisation framework of CWINC was submitted to the Finance Department, and to the Standing Finance Committee which subsequently approved the same by the end of September 1945.
22. September 25, 1946	Rai Bahadur Khosla, the Chairman, CWINC submitted the proposal to the Finance Department to declare the organisation a permanent Body from the date of its establishment.
23. October 14, 1947	The Governor General declared the office of the Central Waterways, Irrigation and Navigation Commission a permanent Organisastion.

24. January 16, 1948	Central Water-Power, Irrigation and Navigation Commission was formed to amalgamate four different bodies, viz.,Electrical Commissioner with the Government of India, the Central Technical Power Board, the Consulting Engineer, Waterways, Irrigation and Central Waterways, Irrigation and Navigation Commission in two organisations, namely "Central Electricity Commission and CWPINC".
25. April 21, 1951	Central Water and Power Commission was formed by merging two organisations namely Central Water-Power, Irrigation and Navigation Commission and Central Electricity Commission into a single organisation.
26. October 11, 1974	Central Water Commission was created by bifurcating CWPC into two organisations viz Central Water Commission and Central Electricity Authority.
27. April 5, 1993	CWINC completed 48 years since its establishment on April 5, 1945.

APPENDIX IV. 2

EXTRACT FROM THE FIRST PROPOSAL ON CENTRAL IRRIGATION AND WATER WAYS ADVISORY BOARD PREPARED BY LABOUR DEPARTMENT AND APPROVED BY DR. B.R. AMBEDKAR

The Labour Department formed an opinion that it would be preferable to create a Central Irrigation and Waterways Advisory Board. We want a Board constantly in being and having the necessary authority. Our idea of this Board could be that it should be composed as follows:

Chairman Waterways and Irrigation Commissioner to the Government of India. This officer would have to have experience of India and should therefore be a senior officer of the Indian Service of Engineers. He would have required knowledge both of waterways and irrigation, but the strength of the Board as an advisory body would be the collective strength of the board and not the individual strength of the Chairman. (He would, however, in his individual capacity supervise the working of the Indian Waterways Research Institution).

Members There would be 3 permanent members:

1. Waterways member
2. Irrigation member
3. Hydro-Electric member

There would also be part-time members- e.g. the Chief Engineers of any Provinces when any matter concerning the Province was under consideration, the Agricultural Advisor to the Government of India when any agricultural matters were under consideration. Power would also be given to coopt members for particular matters.

Note: This constitution leaves the Board without a member for gravity irrigation but it is probable that the Chairman would always have this knowledge.

The responsibilities of the Central Irrigation and Waterways Board would be:

1. A general responsibility for initiating, coordinating and pressing forward schemes of river and waterways control with a view to
   a. prevention of floods;
   b. prevention of erosion;
   c. prevention of waterlogging;
   d. control of water for irrigation purposes;
   e. control of water for power purposes;
   f. utilisation by cheap power provision of sub-soil water for irrigation;
   g. dewatering by use of electric power of waterlogged areas;
   h. regulation of flow of water for navigation purposes.
2. Preparation in consultation with Provincial Governments of water control schemes for all major waterways and preparation of project reports.
3. Organisation of procurement of statistical information regarding waterways, and organisation and control of sub-soil water surveys.
4. Advice to the Government of India on the principles that should be laid down to govern the settlement of disputes between Provinces.

The Board would further require Consulting Engineers on such matters as-

i) Dam construction;
ii) Barrage construction.

H.C. Prior
Secretary
31.8.44

I agree. The only remark I have to make is whether it would not cause considerable delay if we were to consult the Provinces now. Can we not consult them at a later stage ?

B.R. Ambedkar
9.9.1944

APPENDIX IV. 3

DEPARTMENT OF LABOUR RESOULTION

New Delhi, the 5th April 1945*

No. DW.101(2)-The Government of India have decided to constitute a Central Waterways, Irrigation and Navigation Commission. The Commission will act generally as a central fact finding, planning and co-ordinating organisation with fact finding, planning and co-ordinating organisation with authority to undertake construction work. It will be available to advise the Central, Provincial and State Governments in regard to Waterways, Irrigation and Navigation problems throughout the Country. The Commission will be a strong technical organisation designed to conduct, where necessary, surveys and investigations with a view to secure planned utilization of the water resources of the country as a whole and, in consultation with the Provincial and State Governments throughout the country, to coordinate and press forward schemes for the conservation, control and regulation of water and waterways and further, when so required by the Government of India to undertake the execution of any such scheme.

2. *Composition of the Commission:*

The Commission when fully constituted will consist of a Chairman, two full-time Members and such number of part time Members as may from time to time be found necessary. The part-time members will include a Hydro-Electric Expert from the Central Technical Power Board, an expert in mechanical irrigation and an expert in soil conservation and erosion.

The Chairman will be the Consulting Engineer for Waterways irrigation and Navigation with the Government of India. The Members both full-time and part-time will be

*1. As amended by the Labour Department's Resolution No. DW. 101 (55), dated the 1st October, 1945.

2. As amended by the Works, Mines & Power Department's Resolution No. DW. 101 (2) dated the 19th December, 1946.

fully qualified technically so as to ensure that the Commission is a highly competent technical body.

The Commission will co-opt as Members experts, when so required on such matters as malariology and the Chief Engineers of the Provinces and the States concerned with river basin under consideration.

The Commission will have the necessary technical and administrative staff to enable it to carry out its duties.

The Commission, if it so requires, may retain Consulting Engineers for consultation on the problems within its purview, and will maintain lists of Consulting Engineers suitable for consultation on various matters.

3. Functions of the Commission:

I. The Commission will be charged with the general responsibility for initiating, co-ordinating and pressing forward schemes of control, regulation and utilisation of water and waterways in consultation with Provincial and State Governments concerned and to undertake, if so required, the construction of any such scheme on behalf of the Government of India.

II. In exercise of the above responsibility it will be the function of the Commission:

a) To make all necessary investigations in regard to the control of water and waterways with a view to:-
   i) The prevention and control of floods,
   ii) The prevention of erosion and soil conservation,
   iii) The prevention of water-logging and thur (alkalis) and reclamation of water-logged lands by drainage and pumping of thur land,
   iv) The improvement of drainage,
   v) The development by appropriate Governments of flow irrigation from normal flows of rivers and from storage of dams, and of lift irrigation by pumping from tube well and deep set streams with cheap power,
   vi) The development by the appropriate authority of hydro-electric power.
   vii) The development of navigational facilities.

b) To assist Provincial or State Governments (or any river control Commissions or Boards that may be set up) in

the investigation, survey and preparation of water control schemes.

c) When so required by the Central Government, to prepare project reports outlining schemes for the control of any waterway and its waters and further to undertake construction work on any such scheme on behalf of the Government of India.

NOTE-When in the course of carrying out its functions under (a) to (c) above, any matter relating to the generation or possible generation of hydro-electric power on any waterway or any question of investigation into the possibilities of such generation arises, the Commission will consult the Central Technical Power Board in regard to any such matter so as to ensure that interests of hydro-electric development are not overlooked.

d) to organise and co-ordinate the procurement and publication of statistical information relating to-
   i) Waterways, i.e. slopes, cross-sections in normal and flood flows, silt charge, meander characterstics, catchment-characteristics, e.g., topography, geology, vegetable cover, land use etc.,
   ii) Tidal Rivers,
   iii) Rainfall and temperature (these in conjunction with the Meteorological Department) and gauges and discharges of rivers, with a view to secure complete hydrological record, obtain rainfall run-off relationships and trends and determine maximum floods rate and volume of flood flows, their frequency, etc., for purposes of irrigation, drainage and hydro-electric development,
   iv) Sitting of reservoirs,
   v) Sub-soil water resources of the various regions of India with a view to investigating and pressing forward schemes of utilising sub-soil water for irrigation.
   vi) Behaviour of hydraulic structures such as dams, weirs, navigation locks, etc., under actual working conditions in respect of strength and durability of structure and foundation materials, cracks, joints, temperature variation, scour and erosion above and below the works, uplift pressure, etc., and

vii) Standardisation of methods of observation and record in regard to (i) to (vi) above, and the instruments required for such observations.

e) To advise the Government of India and the Crown Representative on the principles that should be laid down to govern the settlement of disputes between Provinces and/or States as to water rights in so far as such rights appertain to water required for flood control, irrigation or navigation purposes and the effect that any flood control, irrigation and navigation project may be likely to have on the interests of other Provinces or States, and on the interpretation of any agreement relating to flood control irrigation and navigation between such Provinces and/or States.

NOTE-Before tendering any advice on disputes as to Water rights, the Central Waterways, Irrigation and Navigation Commission should consult the Central Technical Power Board as to these rights in so far as they may appertain to the generation of hydro-electric power.

f) To initiate and devise schemes for the training of Indian Engineers in the specialised field of Waterways, Irrigation and Navigation.

g) To advise the Government of India and the Crown Representative in regard to the settlement of priorities (where such settlement is necessary for procurement of plant and materials) as between various flood control, irrigation and navigation projects.

h) To advise the Government of India and the Crown Representative in regard to any other matter that may be referred to it in connection with Waterways, Irrigation and Navigation.

ORDER-Ordered that this Resolution be communicated to all Provincial Governments all Chief Commissioners, the several Departments of the Government of India (including Financial Adviser, War and Supply and Financial Adviser (Communications, the Additional Financial Adviser, Supply Finance), the Political Department the Private and Military Secretaries to his Excellency the Viceroy and the High Commissioner for India.

Ordered also that the Resolution be published in the Gazette of India, for general information.

H.C. Prior. Secretary.

APPENDIX IV. 4

NOTE BY A.N. KHOSLA ON ORGANISATION OF CWINC

The Central Waterways, Irrigation and Navigation Commission was constituted by a Resolution of the Government of India Labour Department No. DW. 101 (2) dated 5th April 1945. The composition of the Commission and its functions are outlined in that Resolution.

2. The task before the Commission is immense both in respect of the magnitude of work involved and its effect on the development of the country as a whole. In course of time, this organisation will have its activities spread over the entire length and breadth of India and its assistance will be sought by all the Provinces and States to the end that the water resource of the various regions concerned be exploited for maximum benefit.

The Commission will have a Chairman and two permanent Members and the technical and administrative staff.

3. *Organisation of the Commission*

It is proposed to divide the work of the Commission into six Branches, namely

i. Irrigation,
ii. Navigation,
iii. Waterways,
iv. Hydrology,
v. Designs,
vi. Statistics & Publications,

At the head of each Branch will be a Director who will be assisted by a suitable number of Deputy Directors, Assistant Directors, Technical Assistants, Supervisors, clerical and other staff.

In addition, there will be an Administrative Sub-Branch at the head of which will be a Secretary of the rank of Deputy Director assisted by an Assistant Secretary and Accounts Officer with the necessary strength of Accountants, Clerical and other establishment.

4. The composition and functions of the various Brnaches are dealt with in Para 5. The invention is not to encroach on the Provincial field of activities nor to use the Central agency for carrying out investigation or other work which the Provinces would normally be called upon and are competent to do. It is, as stated in the Resolution, to conduct, when necessary, surveys and investigation with a view to secure planned utilisation of the water resources of the country as whole and in consultation with the Provincial and State Governments to coordinate and press forward schemes for the conservation control and regulation of water and water ways.

5. Composition of the Branches

I. Irrigation Branch.

First State (Partial)		Second Stage (Complete)	
Director	1	Director	1
Dy. Director	2	Dy. Director	3
Asst. Director	3	Asst. Director	9
Tech. Assistants	6	Tech. Assistants	18
Supervisors	4	Supervisors	12

For the first stage it is proposed to appoint the Director and two (out of three) Dy. Directors, three Asst Directors and six Technical Assistants. One Deputy Director will under take the investigation of the many storage projects in Baluchistan. Southern and Central India including States. The other Dy. Director will take over combined charge of projects for gravity and lift irrigation, including domestic water supply. In the second stage the work of this latter officer will be divided between two Dy. Directors, one for gravity irrigation and the other for lift irrigation and domestic water supply.

The Dy. Directors and their assistants will be employed on special investigations on all India basis in addition to the following projects which are under active consideration at the moment-

i) Small storage or retardation dams in Baluchistan, and in the States of Baroda, Jaipur, Kathiawar, Cutch, Nawanagar, Bundi, Audh, Morvi. The question of financial adjustment with the States in respect of

specific investigations will be dealt vide para 11. It is the function of the Commission to assist States as well as the Provinces in their schemes for the conservation and control of water.

ii) The Damodar River for flood control, irrigation navigation and domestic water supply.

ii) The Sone River for flood control, irrigation and navigation.

iv) The Orissa Rivers Subornarekha, Baitarani, Brahmini and Mahanadi for multipurpose development.

v) The Chambal River.

vi) The rivers of the Deccan.

The first step in respect of the above and special investigations will be to make a reconnaissance survey of the possibilities of irrigation (and allied developments) in the various regions, decide on schemes which should come first because of their productivity, quick results or protective value, and then take up detailed investigations of the projects which it is proposed to implement. These investigations will comprise:

i) Project Planning.

ii) Topographical surveys, soil surveys.

iii) Water requirements for irrigation, flood control, navigation, domestic water supply.

iv) Foundation studies.

v) Preliminary Hydroelectric studies (where necessary).

vi) Silting of reservoirs and canals.

vii) Mechanical equipment requirements

viii) Economics

ix) Question of water rights.

The staff of the Irrigation Branch will deal with the various aspects of irrigation projects mentioned above. Other aspects (eg. navigation, hydrology, designs, etc.) will be dealt with by the appropriate Branches.

II. Navigation Branch

First Stage (Partial)		Second Stage (Complete)	
Director	1	Director	1
Dy. Director	1	Dy. Director	2
Asst. Director	2	Asst. Director	6
Tech. Assistants	4	Tech. Assistants	12
Supervisors	2	Supervisors	4

In the first stage it is proposed to recruit the Director, one Deputy Director, two Assistant Directors and four Technical Assistants. The full strength envisaged in the organisation chart will be made up in the second stage.

For various reasons, Navigation has not received due consideration in the past, although the possibilities in this respect appear to be great. A great deal of spade work will need to be done in this connection before a real start can be made:

The Navigation Branch will deal with:

i) The economics of water transport by regions.

ii) The integration of water transport with rail and road transport.

iii) The suitability of river craft and possibilities of improvements with due regard to local factors.

iv) The draught, clearances, etc. for various reaches of waterways and types of river craft.

v) The regulation of supplies by storage and otherwise.

vi) The desirability of dredging, removal of snags etc.

vii) Questions of river conservancy in general.

viii) Questions of harbours, jettles, spurs, piers, breakwaters.

ix) Terminal facilities.

The first stage of investigations will consist in a general reconnaissance of the entire filed. Detailed studies of concrete problems will follow and extend into the second stage. The distribution of staff will be on a regional basis with due regard to need for specialisation.

III. Waterways Branch

First Stage (Partial)		Second Stage (Complete)	
Director	1	Director	1
Dy. Director	1	Dy. Director	2
Asst. Directors	2	Asst. Directors	6
Tech. Assistants	4	Tech. Assistants	12
Supervisors	2	Supervisors	4

In the first stage it is proposed to appoint the Director, one Deputy Director, two Assistant Directors and four Technical Assistants.

Their function will be to carry out reconnaissance survey of the rivers which it is proposed to investigate first (e.g. the Damodar, Sone, Orissa Rivers) to lay down a programme of investigations during the first and subsequent stages and to undertake detailed investigations of the waterways proposed to be dealt with in the first stage.

This Branch will deal with river characteristics viz. slopes, cross-sections, silt charge, meanders, avulsions, embankment, spurs, bank protection, canalisation, tidal studies, and flood control, conservation of marginal lands and other property, river training, regulation of supplies, etc.

After the ground work has been prepared, standards have been laid down and investigations have advanced during the first stage, the balance of staff will be recruited to extend these investigations to a wider field in the second stage. The distribution of duties may be on a regional, specialist or combined basis to suit the needs at each stage.

IV. Hydrology Branch

First Stage (Partial)		Second Stage (Complete)	
Director	1	Director	1
Dy. Director	2	Dy. Director	3
Asst. Directors	3	Asst. Directors	9
Tech. Assistants	6	Tech. Assistants	18
Supervisors	3	Supervisors	6

In the first stage it is proposed to appoint the Director, two Deputy Directors, three Assistant Directors and six Technical Assistants.

The activities of this Branch will form the basis for the activities of all other branches and will comprise the collection of all basic data required for the schemes of conservation, control and utilisation of water and waterways, viz.

i. Rainfall (including snow fall) and rainfall trends.
ii. ii. Run-off (river discharges) and run-off trends.
iii. Temperatures and temperature trends.
iv. Rainfall-runoff relationships.
v. Floods, normal and peak discharges normal floods, flood-trends, flood frequency, etc., rainfall flood relationships.
vi. Ground waters, their occurrence, magnitude, quality and other characteristics.

The available hydrological data are meagre in all but one or two Provinces and practically non-existent in some Provinces and most States. Rain gauge stations are relatively few and far between. These will need to be established on a vastly increased scale for general and ad hoc studies. River gauging will have to be started on all the major rivers of India which possess potentialities for development and at several places on each river to suit the requirements of the local schemes of development. The first attempt in this direction was made by Sir Thomas Ward, the then Inspector General of Irrigation, about 1920 as a result of which daily discharge observations were started, in the Punjab and Sind at something like 40 sites. That has resulted in a most valuable continuous daily record of the stream flows of the entire Indus system for a period of about 25 years. Major projects for irrigation, flood control and power development can be based on this record with a fair measure of confidence as to the availability of supplies and the magnitude and frequency of floods to be dealt with. The activities of this Branch will be the most wide-spread and have the maximum element of urgency about them.

The second stage in this case will come much quicker than in the case of other Branches. This Branch may eventually expand much beyond the set up envisaged in the second stage.

The ground water section being started in the E.H. & L. Deptt. will part of this Branch.

The distribution of duties in this branch will be more specialised than regional up to the Assistant Director level and more regional at the lower levels.

V. Designs Branch

First Stage (Partial)		Second Stage (Completed)	
Director	1	Director	1
Dy. Director	2	Dy. Director	4
Asst. Director	2	Asst. Directors	7
Tech. Assistants	4	Tech. Assistants	12

In the first stage, it is proposed to apppoint the Director, two Deputy Directors, 2 Assistant Directors and 4 Technical Assistants.

The Three Branches of Irrigation, Navigation and Waterways are essentially meant for field investigations. In the preparation of projects in each branch a great deal of design work will be involved. For high efficiency and to prevent overlapping this will all be centralised and handled in the Designs Branch.

The Provinces are generally ill-equipped in respect of personnel for design work, although Madras, Punjab and UP have recently started building up a nucleus staff for this class of work. Speicialist advice is on the whole every where lacking. The Designs Branch of the CWIN Commission will fill this gap. It will be fully equipped so as to be in a position to provide specialist advice in all aspects of design work and thus render much needed assistance to the Provinces and States in respect of design of barrages, weirs, dams, spill ways, outlet works, siphons, falls, locks, escapes, super passages, level crossings, bridges canals, linking tunnels, gates and gearing etc. the basic assumptions for design, e.g. standard loadings, strength and other characteristics of materials of construction, earth-quake effects, safety requirements, economics, etc., and standard specifications.

The question of financial adjustment (if any) between the Central Government and Provinces and States for this specialist service may be considered on some general principles or on ad hoc basis (see para 11).

The main function of this Branch will be to evolve the most economical designs consistent with absolute safety, and to standardise designs as well as methods of design to

the maximum extent possible. This will have a most important bearing on the economics of each and every project.

This Branch may ultimately expand much beyond the final stage and play a leading role in making the various schemes of development a financial success.

The Deputy Director of Research and Training will be responsible for collecting all factual data on existing structures throughout India (e.g. silt carrying capacity of channels; behavior of different types of canal lining; erosion at and uplift pressure under hydraulic structures; temperature stresses in concrete of dams, barrages, weirs, etc., and the behavior of such structures under varying temperature, water load and earthquake conditions, cracks, joints, rock movements, seepage, resistance of structure to attacks of salts and atmosphere etc.). He will check such data against calculated results and the results of such checks will go far in advancing our knowledge of the principles of design and the various underlying theories.

This Branch will form a most useful training ground for engineers of the future. In conjunction with the basic and specific researches being carried out simultaneously at the Central Waterways, Irrigation and Navigation Research Station, the Designs Branch will be able to provide results of the highest importance and utility to the country.

VI. Statistics and Publication Branch

First Stagee (Partial)		Second Stage (Complete)	
Director	1	Director	1
Dy. Director	2	Dy. Director	4
Asst. Directors	2	Asst. Director	4
Tech. Assistants	4	Tech. Assistants	8

It is proposed to hold the post of Director in abeyance in the first stage and to appoint two Deputy Directors, two Assistant Directors and 4 Technical Assistants.

It will be some time before the work of publications becomes of sufficient magnitude to need whole time attention of a Director. Pending the appointment of the Director of Statistics and Publications, the Statistical and Library Sections will take instructions from the Director of Designs and the Priority Section from the Director of Irrigation.

The Library and Information Bureau attached to the Central Board of Irrigation should be transferred to the CWIN Commission as soon as possible. This library will be constantly needed by the Commission in their day to day work. In the meantime orders will be placed abroad for the specialist literature required for the Commission and arrangements will be made for the interchange of literature between the Commission and similar organisations in other parts of the world.

The functions of the Statistical and Publications Branch will be to do all the statistical work for the other Branches, collect the details and results of their activities and publish them in proper form; and through the information Bureau make such information available to the Provinces States and other bodies in India and abroad.

6. Subordinate Field Staff

A small number of Supervisors have been provided under the Irrigation, Navigation and Waterways Branches to carry out field investigation. Additional ad-hoc staff will be employed chargeable to the contingent grant of the Commission or to the work concerned if a separate estimate has been sanctioned for the purpose. Cost of any stores or special equipment will be similarly dealt with.

7. *Touring*

The Directors of Irrigation, Navigation, Waterways and Hydrology and their subordinate officers will have fair amount of touring to do. The Directors of Designs and Statistics and Publications will on the other hand, remain more at headquarters. They and their subordinate officers will, however, have to go out periodically to keep in touch with field conditions, particularly in connection with field research.

8. Training of Officers Abroad

In order that the activities of the Commission be carried out on the most up to date lines, it will be necessary to keep fully in touch with the latest developments in the technique of planning, construction and design of works connected with Waterways, Irrigation and Navigation. This can be done by maintaining close touch with current literature and by establishing personal contacts between the officers of the Commission and officers of similar organisations abroad. The latter objective can be attained by means of a planned programme of training abroad of suitable officers of the Commission and deputation or study leave and where possible by inviting foreign specialists for periodical visits.

9. *Summary* of Number of Posts under the first and final stages.

Name of Post	Stage I No.	Stage II No.
Directors	5	6
Deputy Directors	10	18
Assistant Directors	14	44
Technical Assistants Grade I	5	14
Technical Assistant Grade II	10	28
Technical Assistants Grade III	13	41
Secretary	1	1
Assistant Secretary	1	1
Accounts Officer	1	1
Superintendent (Technical)	1	3
Supervisors	11	26
Superintendents	2	4
Accountants	1	4
Assistants	14	30
Clerks	24	40
Accounts Clerks	2	3
Stenographers	20	29
Head Draftsman Grade I	1	1
Head Draftsman Grade II	1	3
Draftsmen	2	6
Tracers	4	12
Computors	1	4
Ferro Printers	2	6

Duftries	6	14
Peons including 2 Frash	55	108

10. Financial adjustment between the Central and Provincial and State Governments.

It is difficult at this stage to visualise in full the various directions in and the extent to which general advice on and detailed assistance of the Commission will be sought by the Provinces and States.

The Commission may, for instance, be called upon to advise on a project for storage, flood control, irrigation, drainage, navigation, domestic water supply, etc., in respect of

(a) adequacy of data or collection of additional data,
(b) technical aspects,
(c) feasibility from water supply, structural and economical considerations,
(d) designs and estimates,
(e) water rights

or

to undertake (adequate technical personnel not being available with the Province or State concerned),

(f) (visit to works with a view to advise on foundation conditions and foundation treatment, soil conditions for irrigation, drainage and reclamation, training of a particular river, flood damage and its prevention,
(g) designs of special works,
(h) investigations and surveys of part or whole of the project,
(i) preparation of the project,
(j) advice on methods and materials of construction, plant layout and actual construction operations,
(k) detailed examination of a project already prepared by the Province or State concerned.

As a great principle all special advice should be charged for, but no charge should be made for basic and other work such as

(a) data collected by the Commission (except cost of publication),
(b) Advice of a general nature,
(c) Preliminary investigations of schemes of regional development undertaken at its own initiative by the Commission,
(d) Standard designs and specifications prepared by the Commission in the normal course (Cost of publications should, however be charged),
(e) Visits to projects which are regional in character,
(f) Visits for general advice;

provided that in respect of (e) and (f) charges shall be regulated as indicated in the sub- para next but one below.

The Provinces and States should be charged in full for

(i) Collection of special data,

(ii) Special investigation,

(iii) Ad hoc design work and specifications,

(iv) (iv)Preparation of a project,

(v) Examination of a project,

(vi) Visits during investigations or actual construction,

If these are required exclusively for the purpose of a Province or State concerned. This charge should, however be on the basis of actual cost.

The possibilities of development are enormous. We visualise that at no distant date the Second-Stage strength of this Commission will be found to be inadequate for the growing needs of the country and that will be developed into a still bigger organisation. But we prefer to leave that for consideration when the time comes.

11. A great deal of work has started coming in from the Provinces and more particularly from the States. Further it has been decided to proceed with one preliminary and detailed investigations of the Damodar and Sone rivers for Irrigation, Navigation, Flood Control, and domestic water supply of the Subarnarekha, Baitarani, Brahmini and Mahanadi rivers of Orissa for

multipurpose development. There is also urgent need for starting hydrological studies throughout India particularly in regions where little work has been done so far in this connection. These studies would form the basis of all schemes of water and waterways development. It is most necessary, therefore, that Stage I of the organisation of the Central Waterways, Irrigation and navigation Commission should become operative without delay.

Approval is requested in general to the organisation of Central Waterways, Irrigation and Navigation Commission as set forth in the preceding paragraphs and in the organisational chart attached.

Approval is requested to the first stage of the organisation to become operative and to the recruitment of the staff and the incurring of other expenditure so called in para 8 under Stage I with immediate effect.

4.8.1945

A.N. KHOSLA
Chairman
Waterways, Irrigation &
Navigation Commission
Labour Department

APPENDIX IV. 5

EXTRACT ON PROPOSAL TO MAKE CWINC A PERMANENT ORGANISATION

The CWINC was originally set up as a planning and advisory body. It was later decided to expand its functions to include a fully equipped Designs Branch. Here recently it has been decided to entrust to the Commission the responsibility for the construction of certain major projects sponsored by it, if the Government of India so desire. The construction of the Hirakud Dam Project has been so entrusted.

The work of advising and planning which forms the primary responsibility of the Commission must be continued over a long period of time if it is to be productive of good and lasting results. The problems of river valley development which the CWINC is being called upon to tackle are so many. The field is so vast and the repercussions of such development on the agriculture, industry, standard of living of the masses, national wealth and economy and national defence are so vital that it would be suicidal to put a time limit to the life of the organisation. This fact was fully recognised by the concerned HMs at the time the CWINC was set up but the progress that has been made since in the preparation and furtherance of the many schemes of river valley development (e.g. the Mahanadi, Kosi, Tista, Chambal), the increasing number of requests from Provinces and States for advice on various aspects of their projects (e.g Tungabhadra and Rampadasagara in Madras, Lakhavalli in Mysore, dams on Chambal river More Project, proposed Sind Barrage) and the growing importance of the Commission in respect of water rights and inter-Provincial agreements (e.g. Tungabhadra agreement between Madras, Mysore and Hyderabad, Rampadasagara negotiations between Madras and Hyderabad, the Sind-Punjab dispute, the Punjab-UP dispute, the Sind-Khairpur settlement, negotiations with Sikkim in respect of Tista and with Nepal in respect of Kosi), emphasise the necessity of setting up the Central Water ways, Irrigation

and Navigation Commission on a permanent basis. The delegation to the Commission of additional functions in respect of designs and the undertaking of construction of major river development projects, make such necessity imperative.

Water constitutes the basic wealth of the country. From water will come irrigation and food production, cheap power and industrial development, cheap transport facilities by navigation, fish culture, producing protective foods for the masses and opportunity for employment. From these revenues will accrue to the State, in ever increasing measure, for use in education, public health and other essential nation building activities which produce no direct revenues. Water is thus the basic tool with which to build up the wealth and well-being of the nation. Its proper control conservation and utilisation should, therefore, be the first and foremost concern of a National Government.

For the fulfilment of this task, we must secure the services of the best men who should give ungrudgingly and unremittingly of their knowledge, experience initiative and organisational skill so that the water wealth of the country can be exploited to the utmost and for the maximum good of the maximum number. The only way to attract the best men and-what is more important-To keep them, is to assure to them continuity of work and security of service. The activities of the CWINC will grow as the years pass by. The planning execution and operation of one single scheme to the limit of its development may take 20 to 30 years and there are many schemes already in hand and in prospect. It is therefore inconceivable that at any time in the future it will be found necessary to curtail or suspend the activities of this organisation. Serious difficulty is being experienced in recruitment of officers and staff because of the indefiniteness of tenure. Until such time as the Commission is declared to be permanent we can only recruit on a temporary basis. In the advertisements we have been saying (on the strength or HM's remarks referred to in para 1 above) that the posts are likely to be made permanent. This vague hope is however not enough to attract the best men. The latter prefer to go to the Provincial services while are as well, if

not better, paid and are permanent or to the Central services like C.P.W.D.,

Railways, etc. It will obviously be most unwise to entrust the building up of the future wealth and well-being of the nation in the hands of second rates.

Another strong reason why the recruitment should be on a permanent basis, is the absolute necessity for continuity in the Planning, Designs and Construction Branches of the Commission. Temporary men can have little stake or interest unless they can have hope of confirmation. On construction if the staff is all or mostly temporary, serious inefficiency and corruption may result. The loss to the nation in the form of poor quality of work, excessive expenditure and delayed development will be formidable.

I therefore strongly recommend that

a) The Central Waterways, Irrigation and Navigation Commission be immediately declared permanent with effect from the date of its setting up;

b) The rates of pay may be as already sanctioned subject to such adjustments as may be decided as a result of the recommendations of the Central Services Pay Commission.

A.N. Khosla
29.9.46

APPENDIX IV.6

APPROVAL ON CONVERTING CWINC INTO A PERMANENT BODY

GOVERNMENT OF INDIA MINISTRY OF WORKS MINES AND POWER

No. DW.1-1 (25) CWINC

New Delhi
14th October 1947

From

Rai Sahib N.B. Chatterjee, M.Sc.
Deputy Secretary to the Govt. of India

To

The Chairman
Central Waterways, Irrigation and Navigation Commission,
New Delhi

Subject-Setting up of the CWINC on a permanent basis.

Sir,

I am directed to say that Governor General is pleased to declare the office of the Central Waterways, Irrigation and Navigation Commission as a permanent organisation under the administrative control of this Department.....

I have the honour to be
Sir
Your obedient servant,

N.B. Chatterjee
Deputy Secretary to the Govt. of India

APPENDIX VI.1

LETTER BY THE VICEROY VISCOUNT WAVELL TO DR. AMBEDKAR, CABINET MEMBER, LABOUR REGARDING HIRAKUD DAM

The Viceroy's House
20th January 1946

Dear Dr. Ambedkar,

It is very satisfactory that Madras and Orissa have been able to come to terms about the Machkund case. I have telegraphed to both the Governors asking them to see that the agreement is confirmed as soon as possible.

I understand from Menon that in the course of negotiations the desirability of making an early start with the Mahanadi scheme by the construction of a dam at Sambalpur was mentioned. Orissa is a very poor and backward Province and if it is technically sound to construct the Sambalpur dam a point on which I think we should be able to satisfy ourselves at once-I hope we shall be able, subject to Rowland's agreement, to go ahead almost immediately. You know my interest in water control and irrigation, and I should like to be kept in touch with progress. Perhaps we could aim at a decision early enough (if we decided to go ahead) to enable Lewis to lay the foundation stone before he hands over charge on the 31st March.

Yours Sincerely,
Wavell

The Hon'ble
Dr. B.R. Ambedkar

APPENDIX VI. 2

LETTER BY DR. AMBEDKAR, CABINET MEMBER, LABOUR TO THE VICEROY VISCOUNT WAVELL REGARDING HIRAKUD DAM

Department of Labour

Dear Lord Wavell.

Would you refer to paragraph 2 of your letter of the 20th January? I have had this matter examined by my Department in consultation with Finance Department. Khosla has reported that the Sambalpur Dam must definitely form part of the Mahanadi Scheme, that the geological report is satisfactory but that he is not yet able to estimate the cost or the revenue accruing from either the dam or the scheme as a whole. He considers, however, that it is so certain that the Sambalpur Dam will form part of the Mahanadi Scheme that it is quite legitimate to lay the foundation stone in March. The Finance Member is all in favour of schemes of this sort and does not consider that the laying of the foundation stone will involve any specific commitments though he considers-as I do-that if a decision to lay a foundation stone is taken we can authorise the Governor to state that the Government are determined to control and utilise the Mahanadi to the best advantage of the country and that in this matter the Provincial Government hopes to receive all reasonable support from the Central Government provided that the project plans now under preliminary preparation show, as is expected that it is worthwhile to go on with the scheme.

In your letter you have said that we might perhaps aim at a decision early enough to enable Lewis to lay the foundation stone before he hands over charge. I think the only decision we can take is that we will assist Orissa in carrying forward the Mahanadi Scheme subject to the proviso indicated above. I think that this decision justifies us in going ahead with laying a foundation stone provided that with this assurance the Governor himself is prepared to do so from the Orissa angle.

My Department has shown this letter to Finance Department who agree with it.

Yours Sincerely,
B.R. Ambedkar
Member Labour
February 1946

His Excellency
the Right Honorable Viscount Wavell.

APPENDIX VII.1

ESTABLISHMENT OF CENTRAL TECHNICAL POWER BOARD

GOVERNMENT OF INDIA
DEPARTMENT OF LABOUR RESOLUTION
New Delhi, the 8th November, 1944

No. EB6- The Government of India have decided to constitute a Central Technical Power Board. This Board will act as a Central Planning Organisation. It will be available to advise the Central, Provincial and State Governments in regard to the universally accepted policy of encouraging, planning and pressing forward the widespread development of public electricity supply throughout the country. The Board will be a strong technical organisation designed to collect ideas, conduct surveys and prepare outline schemes for electrical development in consultation with Provincial and State Governments.

2. Composition of the Board

The Board, when fully constituted, will consist of a Chairman, two full-time members, three part time members, and such number of ex-officio members as Government may from time to time find necessary. Power will, however, be retained to increase the number of full-time and part-time members if circumstances so require.

The Chairman will be the Electrical Commissioner with the Government of India. The two full time members and all part-time members will be fully qualified technically. The posts, the holders of which will be ex-officio members of the Board, will be notified in the Gazette of India and will be posts such as those of the Industrial Adviser or the Agricultural Adviser to the Government of India.

The Board will have a staff of engineers and clerical establishment. The headquarters of the Board will be at Calcutta for the present.

3. Functions of the Board

The Board will be charged with the general responsibility for initiating, co-ordinating and putting forward schemes for electric power development and utilisation throughout the country in consultation with the Provincial and State Governments concerned, and its functions will be-

a) To survey the electric power requirements of any region which would appear to exhibit prima facie the need of an electricity supply scheme but where no comprehensive plan appears to be in hand;
b) To assist Provincial or State Governments in formulating electric power development schemes when requested to do so by such Governments.
c) To investigate and bring to light the prospects for the utilisation of electric power in any region where it would appear that the economic development of that region could benefit thereby:
d) To prepare project reports outlining electric power development schemes, including recommendations for the organisation proposed to carry out any scheme, together with estimates of capital expenditure, revenue and an appreciation of the economic effect on the region under consideration. Such project reports then to be presented to the Provincial and/or State Governments affected with a view to encouraging the appropriate authority to implement the scheme.
e) To formulate schemes for the widespread development and utilisation of electric power supply, wherever a supply is not already available or where not provided at economic cost;
f) To maintain contact with all Provincial or State Governments and assist such Governments with advice on methods for the further development of electric power throughout their territories;
g) To encourage, in collaborating with Central Provincial or State Governments irrigation and agricultural authorities, the development of power, irrigation and rural electrical development wherever such schemes can be expected to assist the economic condition of the agriculturalists and rural communities.

h) To become the Central authority responsible for the load direction and collation of hydrographic surveys throughout India on a recognised standard basis. In carrying out this work to encourage Provincial and State Governments to develop their hydrographic surveys, assisting such Governments where necessary to do so by the provision of their survey methods;
i) To review and lay down for the whole of India Standard voltages and practices for generation, transmission and distribution of electricity. Where proposals are made which depart from these standards the attention of the authorities concerned to be called to the disadvantages of non-standard apparatus;
j) To initiate the broad lines of research programmes desirable for the requirements of the special conditions of electric power development in India;
k) To initiate propaganda for the education of the public in the uses of electricity;
l) To initiate and devise schemes for the training of Indian engineers in the specialised field of public electricity supply.

4. Relations with the Electrical Commissioner's Office

The relationship between the Central Technical Power Board and the Electrical Commissioner's Office will necessarily be very close. The Board will become the Central Planning authority as indicated in paragraph 3 above. The Electrical Commissioner's Office will for the time being remain as at present constituted and its functions while continuing to be mainly those concerned with war-time problems in connection with electricity supply including the procurement of heavy plant from overseas, will also include that of being the agency charged with maintaining all statistical data relating to the generation, supply and distribution of electricity and with giving general advice to the Central, Provincial and State Governments on the administration and control of electric utilities (including recommendations on model conditions for electric licences, etc.)

The Government of India will consider to what extent the personnel of the Electrical Commissioner's Office can

be utilised in posts in the Central Technical Power Board in addition to their existing duties.

5. Division of subjects in the Board's organisation

The Board's organisation will be divided into four sections as follows, the first two sections having several subdivisions to deal with various subjects:-

a) Power system planning covering,
   i) Hydro-power station sites, hydro-electric surveys, etc.,
   ii) Power transmission,
   iii) Thermal Power station investigations.
b) Power utilisation covering:-
   i) Power requirements of and supplies to electro-chemical and metallurgical industries,
   ii) ii)Power requirements of and supplies to industrial power and mining,
   iii) Power requirements of and supplies to rural electrification and power irrigation,
   iv) Standards, research and the development of electrical manufactures.
c) Public relations and propaganda.
d) Secretary, finance and treasurer.

ORDER-Ordered that this Resolution be communicated to all Provincial Governments, all Chief Commissioners, the several Departments of the Government of India (including Financial Adviser, War and Supply and Financial Adviser (Communications), the Additional Financial Adviser, Supply Finance), the Political Department the Private and Military Secretaries to His Excellency the Viceroy and the High Commissioner for India.

Ordered also that the Resolution be published in the Gazette of India for general information.

APPENDIX VII.2

EXTRACT FROM ELECTRICITY (SUPPLY) ACT, 1948

THE CENTRAL ELECTRICITY AUTHORITY: 1948

Constitution of the Central Electricity Authority

1. The Central Government shall constitute a body called the Central Electricity Authority generally to exercise such functions and perform such duties under the Act and in such manner as the Central Government may prescribe or direct, and in particular to-

i) Develop a sound, adequate and uniform national power policy, (formulate short-term and perspective plans for power development and co-ordinate the activities of the planning agencies) in relation to the control and utilisation of national power resources;

ii) Act as arbitrators in matters arising between the State Government or the Board and a license or other person as provided in this Act;

iii) Collect and record the data concerning the generation distribution and utilisation of power and carry out studies relating to cost, efficiency, losses, benefits and such like matters ;

iv) Make public from time to time information secured under this Act and to provide for the publication of reports and investigations;

v) Advise any State Government, Board, Generating Company or other agency engaged in the generation or supply of electricity on such matters as will enable such Government Board Generating Company or agency to operate and maintain the power system under its ownership or control in an improved manner and where necessary in co-ordination with any other Government, Board, Generating Company or other agency owning or having the control of another power system;

vi) Promote and assist in the timely completion of schemes sanctioned under Chapter V;

vii) Make arrangements for advancing the skill of persons in the generation and supply of electricity;
viii) Carry out, or make arrangements for, any investigation for the purpose of generating or transmitting electricity;
ix) Promote research in matters affecting the generation, transmission and supply of electricity;
x) Advise the Central Government on any matter on which its advice is sought or make recommendation to that Government on any matter if in the opinion of the Authority, the recommendation would help in improving the generation, distribution and utilisation of electricity; and
xi) Discharge such other functions as may be entrusted to it by or under any other law.

APPENDIX VII.3

MINISTRY OF WORKS, MINES AND POWER RESOLUTION NO. DW. XVI-I (1)

New Delhi the 16th January 1948

The Government of India have reviewed the position regarding the four organisations at present dealing with electricity and waterways development, viz., the Electrical Commissioner with the Government of India, the Central Technical Power Board, the Consulting Engineer, Waterways and Irrigation and the Central Waterways, Irrigation and Navigation Commission. They have now decided to replace these four organisations by two organisations, namely, the Central Electricity Commission and the Central Water-power, Irrigation and Navigation Commission. The composition function, etc., of the Central Water-Power, Irrigation and Navigation Commission shall be as follows:

Central Water-Power, Irrigation and Navigation Commission

This Commission will take over the duties now performed by the Consulting Engineer for Waterways and Irrigation and the Central Waterways, Irrigation and Navigation Commission. Set up by Department of Labour Resolution No. DW. 101 (2), dated the 5th April, 1945, and such part of the duties of the Central Technical Power Board, set up by Department of Labour Resolution No. EB-6, dated the 8th November 1944, as relate to hydro-electric power generation.

2. Composition of the Commission

The Commission, which will be a strong technical organisation, will consist of a Chairman, two full time members and such other full-time or part-time members as Government may, from time to time, find necessary. The Chairman and the full time members will be fully qualified technically.

The Chairman will be ex-officio Consulting Engineer for Water-power, Irrigation and Navigation.

3. Staff

The Commission will have the necessary technical and administrative staff to carry out its duties. The Commission will employ when necessary, experts on such matters as malariology, soil conservation, agriculture, etc., and associate in its work, as required. Chief Engineers from provinces and States concerned with the river basins under consideration. The Commission, if it so requires, may retain Consulting Engineers for consultation on the problem within its purview.

4. Functions of the Commission

The Commission will be charged with the general responsibility of initiating, co-ordinating and furthering in consultation with the Provincial and State Governments concerned, schemes except the Damodar Valley Scheme, for the control, conservation and utilisation of water resources, throughout the country, for purposes of water-power generation, irrigation, navigation and flood control and, if so required, the conservation of any such schemes on behalf of the Government of India.

In exercise of the above responsibilities it will be the function of the Commission-

a) To make all necessary investigations and surveys and when so required, to prepare schemes and designs for the development of river valleys in respect of-
   i) Hydro-electric power generation,
   ii) Irrigation by gravity flow or lift,
   iii) Navigation,
   iv) Flood Control,
   v) Soil Conservation,
   vi) Water logging, alkalinity and drainage, and
   vii) Other related facilities such as malaria control, recreation, and fish culture.
b) To co-operate with the Central Electricity Commission in Plans and designs for transmission, switching and utilisation of water-power;
c) To undertake construction work on any river valley development schemes on behalf of the Government of India;
d) To advise and assist, when so required the Provincial or State Governments (or River-Commissions,

Investigation, surveys and preparation of river valley development schemes;

e) To advise the Government of India in respect of water and water-power rights and disputes as between Provinces and/or States, of the effect which any scheme for the conservation and utilisation of water may have on the interests of the concerned Provinces or States and of the interpretation of any agreement in this regard between the said Provinces and States;

f) To advise the Government of India in regard to the settlement of priorities for plant, materials and foreign exchange as between various river valley development projects;

g) To advise the Government of India in regard to any other matter that may be referred to the Commission in connection with river valley development;

h) To initiate schemes and arrange for the training of Indian engineers in India and abroad in the many aspects of river valley development;

i) To standardise instruments, methods of observations and record, materials and construction design and operational features;

j) To conduct and co-ordinate research on the various aspects of river valley development schemes such as water power generation, irrigation, navigation, flood control, etc., and the connected structural and design features; and

k) To collect, co-ordinate the collection of, publish and analyse data relating to water-power, waterways, tidal rivers, rainfall, run-off and temperature, ground water resources, silting of reservoirs, behaviour of hydraulic structure, etc., and to act as the Central Bureau of Information in respect of these matters.

ORDER-Ordered that Resolution No. DW. 101 (2) dated the 5th April 1945, setting up the Central Waterways, Irrigation and Navigation Commission and Resolution No.EB-6, dated the 8th November 1944, setting up the Central Technical Power Board in so far as it provides for hydro-electric power shall stand cancelled and that this Resolution be communicated to all Provincial Governments all Chief Commissioners the Ministries of

the Government of India. (Including Joint Secretaries, Ministry of Finance Defence Division I & C Division and Communication Division) the Private and Military Secretaries of His Excellency the Governor General and the High Commissioner for India in foreign countries.

Ordered also that the Resolution be published in the Gazette of India, for general information.

BK GOKHALE Secretary

APPENDIX VII.4

MINISTRY OF NATURAL RESOURCES AND SCIENTIFIC RESEARCH RESOLUTION

No. EL 1-201 (5) New Delhi
21st April 1951

The Government of India have reviewed the position regarding the two organizations at present dealing with Electricity and Waterways Development viz., the Central Electricity Commission and the Central Water-power, Irrigation and Navigation Commission which were set up vide the late Ministry of Works, Mines and Power's Resolution Nos. EL 1201 (1) and DW XVI-I (I), dated the 16th January 1948. They have now decided, on grounds of economy and efficiency to amalgamate these two organizations and constitute them into one organization to be known as the Central Water and Power Commission. The composition, functions, etc. of the Central Water and Power Commission shall be as follows:

Central Water and Power Commission

The Commission will take over the functions of the Central Water Power. Irrigation and Navigation Commission and also those of the Central Electricity Commission.

Composition of the Commission- The Commission will be a strong technical organisation and when fully constituted will consist of a Chairman and four Members, two of them directing the Water Wing and the other two directing the Power Wing and such other full-time find necessary . The Chairman and the full-time Members will be fully qualified engineers. The Chairman will also be ex-officio Consulting Engineers to the Government of India. In order to give due emphasis to the needs of both Water and Power problems, and to co-ordinate the Designs work, three sub-committees viz. Water Sub-Committee Power Sub-committee and the Design Sub-Committee will be constituted. The Chairman of these Sub-Committees will

be nominated by the Government of India for specified period in the first instance out of the four Members of the Commission.

Functions of the Commission-The Commission will be charged with the general responsibility of initiating, coordinating and furthering in consultation with the State Governments concerned, schemes for the control, conservation and utilization of water resources, throughout the country, for purpose of flood control, Irrigation, navigation and water power generation as well as schemes of thermal power development and also schemes of transmission and utilization of electric energy throughout the country. The Commission will if so required also undertake the construction and execution of any such scheme. In exercise of the above responsibilities, it will be the function of the Commission-

a) to make all necessary investigations and surveys and when so required to prepare schemes and designs:

i) for the development of river valleys in respect of power generation, irrigation by gravity flow or lift, navigation, flood control, soil conservation, anti-water logging measures, reclamation of alkaline and saline soils, drainage and other related facilities such as malaria control recreation and fish culture; and

ii) for thermal electric power and development.

b) to undertake construction work on any river valley development or electric power development schemes on behalf of the Government of India or State Governments concerned:

c) to advise and assist, when so required, the State Governments (Commissions, Corporations or Boards that may be set up) in the investigation, surveys and preparation of river valley and power development schemes for particular areas and regions and in the surveying of potential sources of load, the forecasting of revenue from electricity supply and the formulation of electricity tariffs.

d) to advise the Government of India in respect of water and water-power rights and disputes as between different units, of the effect which any scheme for the conservation and utilization of water may have on the interests of the concerned units and of the

interpretation of agreements in this regard between different units and any matter that may be referred to the Commission in connection with river valley development.

e) to advise the Central and State Governments on the administration of electricity legislation and control of electric utilities.

f) to advise the Government of India in regard to all matters relating to electric power development, public electric utilities both private and State owned:

g) to advise the Government of India in regard to the settlement of priorities for plant, materials and foreign exchange as between various river valley development and power projects.

h) to collect co-ordinate the collection of, publish and analyses, data relating to waterways, tidal rivers, rainfall, runoff and temperature, ground water resources, silting of reservoirs, behavior of hydraulic structure etc. and to act as the Central Bureau of Information in respect of these matters.

i) to collect, maintain and publish statistical data relating to the generation, distribution and utilizations of electricity throughout India and to act as the Central Bureau of Information on all matters relating to the public electricity supply.

j) to initiate schemes and arrange for the training of Indian Engineers in India and a abroad in all aspects of river valley development and electricity supply industry;

k) to standardize instruments, methods of observation and record, materials and construction design and operational features.

l) to review and lay down for the whole of India Standard voltages and practices for generation, transmission and distribution of electrical energy.

m) to conduct and co-ordinate research on the various aspects of river valley development schemes such as flood control, irrigation, navigation, power development etc. and the connected structural design features: and

n) to conduct experiments, research, propaganda and generally to carry out such other activities as will promote the spread and use of electricity throughout

the country in particular in the semi urban and rural areas.

ORDER-Ordered that Resolution No EL-I-201 (I), dated the 16th January 1948, setting up the Central Electricity Commission and Resolution No. DW XVI-I (I), dated 16th January, 1948, setting up the Central Water power, Irrigation and Navigation Commission shall stand cancelled and that this Resolution be communicated to all State Governments all Chief Commissioner the several Ministries of the Government of India, etc.

APPENDIX VII.5

EXTRACTS FROM RASHTRAPTI BHAWAN, NEW DELHI NOTIFICATION NO. CD-873/74

Under Cabinet Sectt. Memo. No. 74/2/22/74-CF dated 11.10.74 addressed to all Members of the Council of Ministries etc.

In exercise of the powers conferred by clause (3) of article 77 of the Constitution, the President hereby makes the following rules further to amend the Government of India (Allocation of Business) Rules, 1961, namely:-

1. (1) These rules may be called the Govt. of India (Allocation of Business) (One Hundred and Sixth Amendment) Rule, 1974.
   (2) They shall come into force at once.
2. In the Government of India (Allocation of Business) Rules, 1961 (here in after referred to as the said rules) in the First Schedule-
   i) For entry 1, the following entry shall be substituted namely:-
   1. Ministry of Agriculture and Irrigation (Krishi aur Sinchal Mantralaya):
   i) Deptt. of Agriculture (Krishi Vibhag)
   ii) Deptt. of Food (Khadya Vibhag)
   iii) Deptt. of Rural Development (Gramin Vikas Vibhag)
   iv) Deptt. of Agricultural Research and Education (Krishi Anusandhan aur Shiksha Vibhag)
   v) Deptt. of Irrigation (Sinchai Vibhag)
   ii) After entry 4, the following entry shall be inserted namely:-
   "4A. Ministry of Energy (Oorja Mantryalaya):
   i) Deptt. of Power (Vidyut Vibhag)
   ii) Deptt. of Coal (Koyala Vibhag)
3. In the Second Schedule to the said rules-
   a) i) For the heading "MINISTRY OF AGRICULTURE (KRISHI MANTRALAYA) the heading of "MINISTRY OF AGRICULTURE AND IRRIGATION (KRISHI AUR SINCHAI MANTRALAYA) shall be substituted:

ii) After the sub-heading D. DEPARTMENT OF AGRICULTURAL RESEARCH AND EDUCATION (KRISHI ANUSHANDHAN AUR SHIKSHA VIBHAG) as so amended and the entries thereunder the following sub-heading and entries shall be inserted, namely:-

"E. DEPARTMENT OF IRRIGATION (SINCHAI VIBHAG)

1. General Policy: Technical assistance, research and all matters relating to irrigation, flood control anti water logging, drainage and anti-sea erosion.
2. Regulation and development of inter-state rivers and river valleys.
3. Administration of the River Boards Act, 1956.
4. Administration of the Inter-State Water Disputes Act 1956.
5. Central Water Commission.
6. Central Board of Irrigation.
7. Central Flood Control Room.
8. Farakka Barrage Project.
9. Indus Water Treaty 1960.
10. International Commission and Conference relating to Irrigation and flood control.
11. Irrigation and Flood Control Schemes in Union Territories:

"MINISTRY OF ENERGY (OORJA MANTRALAYA)

A. DEPARTMENT OF POWER (VIDYUT VIBHAG)

1. General Policy in the field of energy.
2. Research, development technical assistance and all matters relating to hydro-electric and thermal power.
3. Administration of Indian Electricity Act, 1910.
4. Administration of Electricity (Supply) Act, 1948.
5. Central Electricity Board.
6. Central Electricity Board (sic)
7. Power Schemes in Union Territories.
8. The Damodar Valley Corporation.
9. National Projects Construction Corporation Ltd.
10. Bhakra Management Board and Beas Project (Except matters relating to irrigation).

APPENDIX VIII. 1

EXTRACTS RELATING TO WATER FROM DRAFT CONSTITUTION OF INDIA PREPARED BY THE DRAFTING COMMITTEE HEADED BY DR. B.R. AMBEDKAR

Interference with Water Supplies

239, if it appears to the Government of any State for the time being specified in Part 1 or Part III of the First Schedule that the interests of that State, or of any of the inhabitants thereof, in the water from any natural source of supply in any State have been, or are likely to be affected prejudicially 30 by-

(a) Any executive action of legislation taken or passed or proposed to be taken or passed or

(b) The failure of any authority to exercise any of their powers.

With respect to the use, distribution or control of water from that source, the Government of the State may complain to the President.

240 (1) If the president receives such a complaint as aforesaid, he shall, unless he is of opinion that the issues involved are not of sufficient importance to warrant such action, appoint a Commission consisting of such persons having special knowledge and experience in irrigation, engineering administration, finance or law as he thinks fit, and request that Commission to investigate in accordance with such instructions as he may give to them, and to report to him on the matters as he may refer to them.

(2) A Commission so appointed shall investigate the matters referred to them and present to the President a report setting out the facts as found by them and making such recommendations as they think proper.

(3) If it appears to the President upon consideration of the Commission's report that anything therein contained requires explanation, or that he needs guidance upon any point not originally referred by him to the

Commission, he may again refer the matter to the Commission for further investigation and a further report.

(4) For the purposes of assisting a Commission appointed under this article in investigating any matters referred to them the Supreme Court, if requested by the Commission so to do, shall make such orders for the purpose of the proceedings of the Commission as they may make in the exercise of the jurisdiction of the court.

(5) The report of the Commission shall include a recommendation as to the Government or persons by whom the expenses of the Commission and any costs incurred by any state or persons in appearing before the Commission are to be paid and an order made by the President under this article, in so far as it relates to expenses or costs. May be enforced as if it were an order made by the Supreme Court.

(6) After considering any report made to him by the Commission the President shall, subject as herein after provided make orders in accordance with the report.

(7) If upon consideration of the Commission's report the President is of opinion that anything therein contained involves a substantial question of law, he shall refer the question to the Supreme Court under article 119 of this Constitution and on receipt of the opinion of the Supreme Court thereon shall, unless the Supreme Court has agreed with the Commission's report, return the report to the Commission together with the opinion and the Commission shall thereupon make such modifications in the report as may be necessary to bring it in accord with such opinion and present the report as so modified to the President.

(8) Effect shall be given, in any State affected, to any order made under this article by the President and any Act of the Legislature of a State which is repugnant to the order shall, to the extent of the repugnancy, be void.

(9) The President on application made to him by the Government of any State affected may at any time. If a Commission appointed as aforesaid so recommend, vary any order made under this article.

241. If it appears to the President that the interest of any state for the time being specified in Part 11 of the First Schedule, or of any of the inhabitants of such a State in the water from any natural source of supply in any State for the time being specified in Part 1 or Part III of the First Schedule have been or are likely to be affected prejudicially by-

(a) Any executive action or legislation taken or passed, or proposed to be taken or passed; or
(b) The failure of any authority to exercise any of their powers.

with respect to the use, distribution or control of water from that source he may, if he thinks fit, refer the matter to a Commission appointed in accordance with the provisions of the last preceding article and thereupon those provisions shall apply as if the State for the time being specified in Part II of the First Schedule were a State for the time being specified in Part I of that scheduled and as if a complaint with respect to the matter had been made by the Government of that State to the President.

242. Notwithstanding anything in this Constitution, neither the Supreme Court nor any other court shall have jurisdiction to entertain any action or suit in respect of any matter. If action in respect of that matter might have been taken under any of the three last preceding articles by the Government of a State or the President.

69. The emoluments and allowances and rights in respect of leave of absence of the President, the salaries and allowance of the Ministers for the Union and of the Chairman and Deputy Chairman of the Council of States and of the Speaker and Deputy Speaker of the House of the People; the salaries, allowance and privileges of the members of Parliament; the salary allowances and the conditions of service of the Auditor Central of India.

70. The enforcement of attendance of persons for giving evidence or producing documents before committees of Parliament.

71. Migration from one State to another.

72. Inter-State quantaratine

73. Inter-State trade and commerce subject to the provision of entry 33 of List II.

74. The development of inter State water ways for purposes of flood control, irrigation, navigation and hydroelectric power.

75. Fishing and fisheries beyond territorial waters.

76. Manufacture and distribution of salt by Union agencies; regulation and control of manufacture and distribution of salt by other agencies.

77. Provision for dealing with grave emergencies in any part of the territory of India affecting the Union.

78. Lotteries organized by the Government of India or the Government of any State.

79. Stock Exchanges and futures market and taxes other than stamp duties on transactions therein.

80. The rates of stamp duty in respect of bills of exchange, cheque, promissory notes, bills of lading letters of credit policies of insurance transfer of shares, debentures, proxies and receipts.

81. Duties in respect of succession to property other than agricultural land.

82. Estate duty in respect of property other than agricultural land.

83. Terminal taxes on goods or passengers carried by railway or air; taxes on railway fares and freights.

84. Taxes on income other than agricultural income.

85. Duties of customs including export duties.

This entry has been inserted to follow the recommendation of the Expert Committee on the Financial Provisions of the Constitution.

APPENDIX VIII 2

DEBATES OF THE CONSTITUENT ASSEMBLY OF INDIA RELATING TO WATER

Draft Constitution: Seventh Schedule List 1, entry 74

The Honourable Dr. B.R. Ambedkar (Bombay; General):

Sir, I move

That for entry 74 of List 1, the following entry be substituted:

> 74. The regulation and development of inter-state rivers and river valleys to the extent to which such regulation or development under the control of the Union is declared by Parliament by law to be expedient in the public interest.

Shri Brajeshwar Prasad (Bihar; General): Mr. President may I with your permission say one word before I move my amendment? Somehow, due to my fault perhaps, one word is missing from this amendment. I want the inclusion of the word "regulation" Sir I beg to move.

That in amendment 3562 of the List of Amendments, for the proposed entry 74 of List 1, the following is substituted:

> 74. The regulation and development of inter-State rivers and inter-State water-ways including flood control irrigation, navigation and hydroelectric power and for other purposes where such development under the control of the Union is declared by Parliamentary by law to be necessary or expedient in the public interest.

Sir, I have only one comment to offer, that this amendment of mine is more comprehensive than the amendment moved by Dr. Ambedkar.

Mr. President: There is an amendment of which notice has been given by Shri Kala Venkata Rao that this entry should be dropped altogether. It is only a motion for deletion and he need not move it is an amendment.

The Honourable Dr. B.R. Ambedkar: Sir all that I would like to say is that whatever Shri Brajeshwar Prasad wants

is included in my amendment and it is therefore unnecessary to accept it.

Shri Brajeshwar Prasad: I beg leave to withdraw my amendment.

The amendment was by leave of the Assembly withdrawn.

Mr. President: I put the amendment in the form in which it has been moved by Dr. Ambedkar.

The question is:

"That for entry 74 of List 1, the following entry be substituted:

> 74. The regulation and development of Inter-State rivers and river-valleys to the extent to which such regulation or development under the control of the Union is declared by Parliament by law to be expedient in the public interest.

The amendment was adopted.

Entry 74, as amended was added to the Union List.

New Article 242-A

Mr. President: Dr. Ambedkar you may move amendment No. 372 A regarding the heading.

Shri T.T. Krishnamachari: If No. 373 is passed than the deletion of the heading is consequential.

The Honourable Dr. B.R. Ambedkar Sir, I move amendment No. 373:

That after article 242, the following new article be inserted-

> 242A (1) Parliament may by law provide for the adjudication of any dispute or complaint with respect to the use, distribution or control of the waters of or in, any inter-State river or river valley.
>
> (2) Notwithstanding anything contained in this Constitution Parliament may, by law provide that neither the Supreme Court nor any other Court shall exercise jurisdiction in respect of any such dispute or complaint as is referred to in clause (1) of this article.

Sir, originally this article provided for Presidential action. It was thought that these disputes regarding water and so on may be very rare and consequently they may be disposed of by some kind of special machinery that might be appointed. But in view of the fact that we are now creating various corporations and these corporations will be endowed with power of taking possession of property and other things, very many disputes may arise and consequently it would be necessary to appoint one

permanent body to deal with these questions. Consequently it has been felt that the original draft or proposal was too hide-bound or too stereo typed to allow any elastic action that may be necessary to be taken for meeting with these problems. Consequently I am now proposing this new article which leaves it to Parliament to make laws for the settlement of these disputes.

Shri R.K. Sidhva: Article 242 is proposed to be deleted and so how does this new article 242 a come up after article 242?

The Honourable Dr. B.R. Ambedkar. This one only indicates the position.

Mr. President: We have passed article 242. Now, does anyone want to speak on this new article? There is no amendment to it.

Shri Brajeshwar Prasad: Mr. President Sir, I support clause (1) of this article but I feel that there is no necessity for vesting power into the hands of Parliament to make laws for resolving disputes in connection with inter-State rivers and river valleys. That matter I feel should have been left in the hands of the President alone.

Mr. President: Now, I put the new article 242 A to vote.

The question is

That article 242A stand part of the Constitution.

The motion was adopted

New Article 242 A was added to the Constitution.

APPENDIX A

DAMODAR VALLEY SCHEME

First Calcutta Conference, January 3, 1944
Dr. B.R. Ambedkar, Labour Member's Speech*

The Government of India is very much alive to the disadvantages arising from the present state of affairs and wishes to takes steps to evolve a policy which will utilize the water resources of the country to the best advantages of everybody and to put our water resources to the purpose which they are made to serve in other countries. observed the Honourable Dr. B.R. Ambedkar, Labour Member, Government of India, in his address to representatives of the Central, Bengal and Bihar Governments at a conference held in the Bengal Secretariat in Calcutta on January 3, 1944 to consider means and methods for developing Damodar Valley.

Here is the full text of Dr. Ambedkar's Speech:

On behalf of the Government of India I thank you for having agreed to hold this meeting at such short notice and at considerable personal inconvenience to yourselves. The purpose of this meeting is to consider means and methods for giving effect to the proposals of the Damodar River Flood Enquiry Committee appointed by the Government of Bengal in 1944. Before I proceed further, It is only proper that I should congratulate the Government of Bengal on the appointment of this Committee. I must also pay my tribute to both on the particular problem of dealing with floods in the Damodar River and on the general problem of the best utilization of the water resources of the country.

Committees Recommendations

I would like to make particular reference to two of its recommendations, namely VIII and XIII. In their recommendation No. XIII the Committee have stated:

* Indian Information February 1, 1945, pp. 101-109.

"During the course of discussions it was felt by the Committee that it will be an advantage in the solution of flood control and soil conservation problems if forests and rivers of India are made the concern of the Central Government".

By their recommendation VIII, the Committee have suggested that the project of damming the Damodar should have as its purpose not merely stopping the flood but also include the generating of electricity and the supply of water for irrigation. Those who are aware of the present policy, or lack of policy. In the matter of the utilization of India' water resources will admit that these are recommendations, the importance of which cannot be exaggerated. It is not far from truth to say that so far there has been an absence of positive all India policy for the development of waterways. Secondly, there has not been enough realization that our policy for waterways must be multipurpose policy so as to include the provision for irrigation electrification and navigation.

Railway and Waterways

Irrigation has been the only purpose of our water ways policy. Further, we have not taken sufficient account of the fact that there is no difference between railways and waterways, and if railways cannot be subjected to Provincial boundaries, neither can waterways, at any rate those that flow from Province to Province. On the contrary we have allowed our constitution to make a distinction between railways and waterways, with the result that railways are treated as Central, but waterways are treated as Provincial.

The disadvantages of this error are many and obvious. To give one illustration a Province needs electricity and wishes to utilise its water resources for the purpose but it cannot do so because the point at which water can be dammed lies in another Province which being water can be dammed lies in another Province which being agricultural does not need electricity and has not interest in it, or money to finance the project, and would not allow the needy Province to use the site. Complain as much as we like, a Province can take such an unfriendly attitude and justify it in the name of Provincial Autonomy.

Utilisation of Water Resources

I have made these observations with a two-fold purpose.

Against this background you are in a better position to evaluate the recommendations of the Damodar River Flood Enquiry Committee appointed by the Bengal Government to which I have made particular reference. My second purpose is to tell you that the Government of India is very much alive to the disadvantages arising from the present state of affairs and wishes to take steps to evolve a policy which will utilise the water resources of the country to the best advantage of everybody and to put our water resources to the purpose which they are made to serve in other countries.

A revision of the Constitution treating waterways on the same footing as the railways will no doubt be a very welcome change. But the Government of India does not think it necessary to wait till such constitutional changes come into being. Nor does the Government think that, if the Provinces show the will to co-operate in a joint project for the utilisation of the water resource, the difficulties created by the Constitutional will stand in their way.

The Government of India has very much in its mind the Tennessee Valley Scheme operating in the United States. They are studying the Scheme and feel that something along that line can be done in India if the Provinces offer their co-operation and agree to override Provincial barrier which has held up so much of their progress and their prosperity. As a preliminary step for securing the best use of the water resources of the country, the Government of India have created a central organisation-Called the Central Technical Power Board, and are contemplating to creat another, to be called the Central Waterways, Irrigation and Navigation Commission.

The object which has led to the setting up of these two organisations is to advise the Provinces on how their water resources can be best utilised and how a project can be made to serve purposes other than bodies such as the Central Utilisation Board or ad hoc Commission of Enquiry. The appointment of the Central Power Board and the Central Waterways, Irrigation and Navigation

Commission does not exclude the setting up of such organisations.

The Damodar river is the first project along this line. It will be multipurpose project. It will have the object of not only preventing floods in the Damodar river but also have the object of irrigation, navigation and the production of electricity.

The authority which will be in charge of this project after it is completed will be more or less modelled, as far as it may be possible on the Tennessee Valley Authority. It will be a co-operative undertaking in which the Centre and the Provinces of Bihar and Bengal will be partners. The Government of India are anxious to give shape form and life to the project and are anxious that no time should be lost in doing so.

New Policy for Waterways

The Government of India feel that they cannot proceed further in the matter unless certain preliminaries are explored. The first such preliminary is the site of the dam Obviously. It cannot be decided in accordance with the wishes of Bengal, Equally, it cannot be decided in accordance with the wishes of Bihar alone. And even if the two Provinces agree upon a site it could not be finalised without the advice of the experts. There are aspects which have also to be gone into. As I have said the Damodar project must be a multipurpose project. We intend that it should not only deal with the problem caused by floods, it should also provide for irrigation electricity and navigation. Along with the question of a site, these matters have also to be examined.

The business of the conference is to come to a decision to the best machinery for doing this job. I hope we shall be guided by the right spirit, leaving aside all sectional points of view, and proceed to our business with a determination to agree upon the best solution and open a way to the inauguration of a new policy in regard to our waterways and lay the foundation for a regime of prosperity for the poverty stricken millions of this country.

Conference Discussions

The Damodar Valley Project, a multipurpose project intended to exploit the Damodar River for irrigation electrification and navigation was discussed at the conference presided over by Dr. BR Ambedkar.

The basis of the discussion was a note circulated by the Central Government regarding the procedure for collecting necessary information.

Suggestions made in this note required that the three Governments should prepare an inventory of the facts and figures available to each other. This inventory was to be prepared in consultation with the Central Government's technical experts and if it did not disclose all the facts required further, information should be collected. The Central Government's technical experts could then prepare a preliminary memorandum setting out the prospects for a co-ordinated scheme for the multipurpose development of the Damodar Valley. The Three Governments should then get together and give the necessary instructions for framing a project to the technical experts of the Central Government and the Provinces.

General Agreement

While there was general agreement on the question of making the Damodar Scheme a multipurpose project representatives of Bengal emphasised that the problem of controlling floods in Damodar should be a primary concern. After some discussion. It was agreed that investigations on the lines suggested by the Central Government should start under Mr Man Singh Special Engineer (Irrigation) with the Bengal Government. The Central and Bihar Government would try to lend officers to assist Mr Man Singh in this investigation Mr A. Karim, Deputy Chief Engineer Irrigation Department Bihar, would remain in touch with Mr. Man Singh.

Earlier during the meeting Mr HC Prior, Secretary Labour Department. Government of India spoke about the administrative side of the waterways problems and indicate ways and means by which the Centre could lay its part.

Among those who attended the Conference were the Hon'ble Mr BP Paine. Minister for Communications and Public Works Bengal Government Mr B Sarkar ICS Secretary Communication and Public Works Department Mr BL Subarrwal Mr. J.F. Russel, Chief Engineer, Bengal Mr Man Singh, Special Engineer (Irrigation) Mr. NK Bose Director River Research Institute, Mr. N Dar, Secretary Post-War Reconstruction Committee, Mr. HM Ishaque,

Development Commissioner and Mr. A Karim, Deputy Chief Engineer. Irrigation Department represented the Government of Bihar, Mr HM Mathews Chairman Central Technical Power Board Mr WL Voorduin, Hydro-Electric Member of the Board and Mr DL Mazumdar were also present to represent the Central Government.

APPEDNIX B

MULTI PURPOSE DEVELOPMENT OF DAMODAR VALLEY

Second Calcutta Conference, August 23, 1944
Dr. BR Ambedkar, Labour Member's Speech*

"The project harnessing the waters of the Damodar River) is a welcome one to the Government of India. It very clearly shows a fine prospect of the control of the River a prospect of controlling floods, of securing a fine area for perennial irrigation with resultant insurance against famine and a much needed supply of power. I am sure it will be more than welcome to the Governments of Bengal and Bihar if they realise to the Governments of Bengal and Bihar if they realise what the project will mean to them and their people."

Thus observed the Hon'ble Dr BR Ambedkar Labour Member Government of India in his address to representatives of Bengal and Bihar Governments at a Conference held in Calcutta on August 23 to discuss the Preliminary Memorandum on the Damodar Valley Multipurpose Project. The session lasted two days, and the Labour Member presided.

Here is the full text of Dr. Ambedkar's Speech:

We are now meeting for the second time to discuss the project for harnessing the waters of the Damodar River. As you will recall, our first meeting in this connection took place on January 3, 1945. We then considered the Report of the Damodar River Flood Enquiry Committee appointed by the Government of Bengal in 1944.

The Issue before us was whether we should be content with damming the river for the purpose of stopping the flood only or whether we should make it a multipurpose project so as to cover generation of electricity and the supply of water for irrigation and navigation also. The consensus of opinion at that Conference was that we should go in for the latter. Accordingly, the Conference decided to take the next step, namely to create machinery

**Indian Information October 1, 1945, pp. 345-9.*

for collecting the necessary data to draw up a multipurpose scheme. On the part of the Government of India I offred the fullest assistance of technical experts in carrying out this preliminary work.

The experts have now drawn up with the co-operation of the engineers from Bengal a Preliminary Memorandum on the Unified Development of the Damodar River Valley. Copies of this Memorandum have already been in the hands of the Government of Bengal and Bihar.

With regard to this Memorandum. I feel it my duty to say, and I am sure in this I am working your sentiments that we are grateful to Mr. Voorduin for the preparation of this draft Memorandum and also to the ready co-operation which was offered to him by the engineering staff of the Bengal Government. Mr Mathews, the Chairman of the Central Power Technical Board, has also given us the benefit of his advice and at a later stage. I have no doubt that we shall receive all the assistance from Mr. Khosla, the Chairman of the Water ways and Navigation Board.

For the present we have before us now a very clear a very comprehensive and a very essential survey of the full possibilities of the Damodar River Valley, accompanied by adequate data enable us to take the next step with confidence.

The reason why we have met today is to consider this Preliminary Memorandum and the points that arise out of it. These points are set in the agenda which is prepared for this meeting. The agenda contains a full list of matters arising out of the Preliminary Memorandum and which require immediate attention. As it has already been circulated to the Governments of Bengal and Bihar it is unnecessary for me to go over it again. I shall, therefore content myself with making two general observations (i) With regard to matters of policy and (2) with regard to questions of method and procedure.

Flood control is a matter of policy. I hope that there will be general agreement as to the desirability of providing that measure of flood protection as will ensure full safety to the vulnerable area of the Damodar Basin against even the most adverse combination of foreseeable natural circumstances. I am glad to say that the scheme

drawn up in the Preliminary Memorandum does provide for that full measure of safety.

The second matter of policy is the collective responsibility of three Governments assembled here to put their shoulders to the task. I believe that there will be general agreement that the findings in the Preliminary Memorandum justify the three Governments in proceeding energetically with the development of the Damodar River Valley on the general lines indicated in the Memorandum.

The project is a welcome one to the Government of India. It very clearly shows a fine prospect of controlling floods, of securing a fine area for perennial irrigation with resultant insurance against famine and a much needed supply of power, I am sure it will be more than welcome to the Government of Bengal and Bihar. If they realise what the project will mean to them and their people.

In concrete terms, the project will give them (1) an aggregate controlled reservoir capacity of about 4,700,000 acre-feet (2) sufficient water for perennial Irrigation of about 760,000 acres besides water for navigation purposes, (3) electrical energy amounting to 300,000 kilowatts and (4) it would serve to promote directly the welfare of five million people and indirectly of many more millions.

Coming now to the question of methods and procedure. We have to decide upon the following points which I am placing before you in order of priority-

1) Selection of dam sites to be taken up first;
2) Further detailed investigations as to the selected dam sites before construction can begin;
3) The agency for such further preliminary investigations;
4) The agency for designing and construction of dams;
5) The creation of high grade administrative machinery to coordinate and push forward the vast amount of work, both technical and administrative, that will have to be done during the stages of investigations and construction that are to follow; and
6) A series of surveys relating to the best utilisation of water and power that will eventually be available in the developed areas.

I would like to emphasize the need for a quick decision on the points relating to method and procedure. The

project is no doubt primarily for the establishment of safety and the development of a multipurpose river basin project. But it cannot be forgotten that the project is a post-war employment project. As the war is now over on all fronts, we are faced with the problems of peace one of which is to prevent unemployment which, with the sudden cancellation and the reduction of war employment and expenditure is going to be one of the gravest problems in our domestic economy.

Central Government's Part

From this point of view, the Damodar Valley Project is a matter of grave urgency and it would be a criminal folly not to come to an early decision, without which it is not possible for us to proceed further in the matter. I, therefore, hope and trust that, with your cooperation, we should be able today to return with our decisions fully and firmly made.

Before closing, let me tell you that the Government of India is very keen, very earnest and is prepared to plays its full part in carrying through its project.

(1) The Government of India in conformity with their earlier declarations recognise their responsibility for doing all that they can to speed up the project on approved lines, and to this end will endeavour to the best of their ability. Though the form of the authority to carry out the project and the manner of setting it up is yet to be defined, the original view of the Government that such an authority should be set up remain unaltered.

(2) The Government of India is prepared to assume direct responsibility for securing the staff and organisation necessary to carry out all further preliminary investigation in such manner as will facilitate and expedite construction with such assistance as the two Provinces can render without any serious assistance as the two Provinces can render without any serious detriment to their post war development works. The Government of India, however, realise the shortage of engineering manpower in Bengal and will endeavour to find the necessary staff by drawing upon the services, if found available, of a military unit and its equipment

to assist in preliminary investigation. This will avoid drawing on the strained engineering resources of the Province at a larger extent than is necessary and will secure a most rapid supply of equipment.

(3) The Centre is prepared to advance, initially, the funds necessary for the further preliminary investigation undertaken by them which are necessary for the main project on the understanding that such preliminary expenses will be charged to the Project if it materialises and divided half and between the Centre and the Province if it does not materialise.

There is only one thing which the Government of India expects the Provinces to do. It expects the Provinces to bear in mind the absolute necessity of ensuring that the benefits of the project get ultimately right down to the grass roots, i.e. everyone living in the Valley and some of those in the vicinity all have their share in the prosperity which the project should bring. This, in my view, is essential and it is for this reason that we want the establishment of some agency early enough so that agency can set about planning at once in the manner in which it's essential and ultimate object can be secured.

Conference Discussions

The Conference decided to proceed rapidly with further investigation and progress in regard to the Unified and Multipurpose Damodar Valley Development Project.

It was agreed that the scheme should provide the maximum measure of flood protection that might be necessary against the most favourable combination of natural circumstances.

Further investigation of possible dam sites of the Damodar River would be necessary before starting actual construction and among the sites which required such investigation were Maithon, Aiyar and Sonalapur. The Conference discussed the technical aspects of the question and decided that the order of priority of investigation should be Maithon first, Aiyar second and Sonalapur third; and that the Central Technical Power Board should prepare project reports for each of those dam sites-in the case of Sonalapur dealing in particular with possible effects on coal production.

Necessary Staff

The Central Government would try to secure staff, at the earliest possible opportunity for the further detailed investigations required for such project reports. Meanwhile, however, investigations should on by such staff as was immediately available.

The Conference agreed that the entire staff engaged on further investigation of dam sites should work under the technical direction of the Central Technical Power Board so that unified control of the preliminary operations could be ensured.

It was further decided to invite four engineers from the U.S.A. to advise on the design and construction of the first two dams to be built under the proposed unified scheme. The engineers would constitute a Technical Mission and should arrive, if possible in India early next year. It was hoped that by that time the required data would be collected and available.

While the ultimate intention is to constitute a Damodar Valley Authority for the administration and carrying out of the Scheme, the Conference decided that as an interim measure, the Central Government should appoint a high ranking Administrative Officer to coordinate all preliminary action and rapidly to push through investigations connected with the proposed Project.

It was agreed that investigation should be undertaken simultaneously for the various other problems connected with the scheme. The Irrigation Departments of the Bengal and Bihar Governments, in consultation with the Central Irrigation, Waterways and Navigation Commission should investigate the best methods of utilising the water made available for irrigation.

Other subjects to be investigated include the development of power demand, including the setting up of nursery stations anti-erosion works, navigational, geological and the water supply aspects of the scheme and the lay-out of transmission lines.

The following representatives of the Central Government and the Government of Bengal and Bihar attended the Conference-

Government of India- Mr. H.C. Prior, Secretary, Labour Department, Mr. D.L. Mazumdar, Deputy Secretary, Labour Department; Mr. M. Ikramullah, Joint Secretary, Supply

Department: Mr. H.M. Mathews, Chairman Central Technical Power Board, Mr. W.L. Voorduin; Hydro-Electric Member, Central Technical Power Board: Mr. C. Coates, Deputy Secretary, Supply Department Mr J.R. Harrison Deputy Coal Commissioner.

Government of Bengal- Mr O.M. Martin, Adviser to H.E. the Governor Communication and Works Department; Mr R.L. Walker Adviser to H.E. the Governor, Finance, commerce, Labour and Industries Department; Mr B.B. Sarkar, Secretary, Communication and Works Department Rai Bahadur S.K. Gupta, Chief Engineer, Irrigation Department, West Bengal; Mr Man Singh, Superintending Engineer on Special Duty, Damodar Scheme; Major M. Jafar, Director of Public Health and Mr. Aziz Ahmed, Joint Secretary, Post-War Reconstruction Department.

Government of Bihar- Mr S.M. Dhar, Development Commissioner and Mr. W.G. Caine, Chief Engineer, Irrigation and Power.

APPENDIX C

MULTIPURPOSE PLAN FOR DEVELOPMENT OF ORISSA'S RIVERS

Dr. BR Ambedkar's Presidential Address at Cuttack Conference, November 8, 1945*

"Orissa want to get rid of the evils of floods. Orissa wants to get rid of malaria and other - to use American phraseology –'low income' diseases causing ill health and corroding the stamina of her people. Orissa wants to raise the standard of living of her people and advance their prosperity by irrigation by navigation and by producing cheap electrical power. All these purpose can fortunately be achieved by one single plan, namely to build reservoirs and store the water which is flowing in her rivers."

Thus observed the Hon'ble Dr. B.R. Ambedkar, Labour Member to the Government of India in his Presidential address at a conference held in Cuttack on November 8 between the representatives of the Central Government and the Governments of Orissa, the Central Provinces and the Eastern States, to discuss the possibilities of developing Orissa rivers.

Orissa's Problems

Referring to the problem of Orissa, the Labour Member observed: "To say that the problem is one of floods is both an oversimplification and an understatement of the problem. I see the problem in somewhat different light. When I think of Orissa, the picture that comes to my mind is that of a people subject not to one affliction, but many.

"One such affliction, which is on the lips of everybody, is the constant exposure of her people to floods which cause damage to life and property and, in a general sense, insecurity. This affliction is due not merely to floods, but also to droughts and famines. Damage by droughts and famines can be as great as that caused by floods.

* *Indian Information,* December 15, 1945, p. 697.

It is said that in the drought of 1866, nearly 40 percent of the population of Puri district perished.

Deterioration in health is another affliction of the people of Orissa. The total population of the province of Orissa is 77 1/2 lakhs. According to the health report of the Province the total deaths in 1944 were 2,35,581. Of these 1,30,000 died from some kind of fevers and a majority of malarial fever. This means that three percent of her people died in 1944, and of these nearly half died of malaria. This is a very high figure. In 1944, 19 percent of the student population was found to show distinct signs of malnutrition and 8.7 percent showed signs of vitamin deficiency.

"If these facts are true, Orissa cannot be said to be above the poverty line. The third affliction of Orissa- I think it could be called an affliction- is its want of internal communications. Orissa is locked up country. Exception the solitary railway line, running alone her eastern sea coast, there is no means of communication either by railway or by canal to connect the vast hinter land with the sea coast."

"Should Orissa continue to be in such a wretched state as it is today?" Dr. Ambedkar asked. "It need not. It has natural resources, and they are by no means meagre. Orissa has coal, Orissa has iron, chrome, graphite bauxite, limestone, mica and Orissa has also bamboo, to mention only some of its important natural resources."

There is another precious possession which Orissa has, namely her water wealth. The amount of water that passes through the Orissa delta is just vast. The delta- comprising roughly the three districts of Cuttack, Puri and Balasore and covering an area of about 8,000 square miles- is traversed by a network of distributaries arising mainly from three rivers, the Mahanadi, the Brahmani and the Baitarani.

"Two more rivers- the Burabalang and the Subarmarekha - of relatively lesser importance also pass through the delta. The three main rivers referred to above drain an area of 69,000 square miles above the delta, lying in the Eastern States, Central Provinces and Bihar. Of these the Mahanadi – the largest of the three -drains

51,000 square miles. Between them, these three rivers carry each year to the sea a discharge of about 90 million acre feet."

Use of Water Wealth

The Labour Member continued: "Given the resources why has Orissa continued to be so poor so backward and so wretched a Province? The only answer I can give is that Orissa has not found the best method of utilising her water wealth. Much effort has undoubtedly been spent in inquiring into the question of floods. As early as 1872, there was a general enquiry by Mr. Rehand, I do not know what happened to his report. Nothing seems to have been done thereafter till 1928. From that year down to 1945, there have been a series of committees appointed to tackle this problem.

"The Orissa Flood Enquiry Committee of 1928 was presided over by the well-known Chief Engineer of Bengal. Mr. Adams Williams. In 1937, the enquiry was entrusted in the able hands of Shir M. Visvesvarayya, who submitted two reports -one in 1937 and another in 1939. His work was followed by the Orissa Flood Advisory Committee. The Committee submitted a preliminary report in 1938 and continued its work till 1942, during which period it submitted three interim reports. The latest effort in that direction was made as recently as March 15, 1945, when a Flood Conference was convened at Cuttack by the Government of Orissa.

"With all respect to the members of these committees, I am sorry to say they did not bring the right approach to bear on the problem. They were influenced by the idea that water in excessive quantity was an evil, that when water comes in excessive quantity, what needs to be done is to let it run into the sea in an orderly flow. Both these views are now regarded as grave misconceptions, as positively dangerous from the point of view of the good of the people.

Conservation of Water

“It is wrong to think water in excessive quantity is an evil. Water can never be so excessive as to be an evil. Man suffers more from lack of water than from excess of it. The

trouble is that nature is not only niggardly in the amount of water it gives, it is also erratic in its distribution - alternating between drought and storm. But this cannot alter the fact that water is wealth. Water being the wealth of the people and its distribution being uncertain the correct approach is not to complain against nature but to conserve water.

"If conservation of water is mandatory from the point of view of public good, then obviously the plan of embankments is a wrong plan. It is a mean which does not sub serve the end, namely conservation of water, and must, therefore, be abandoned. Orissa delta is not the only area where there is so much amount of water and there is so much amount of evil proceeding from that water. The United States of America had the same problem to face. Some of these rivers - Missouri, Miami and Tennessee - have given rise to the same problem in the U.S.A.

"Orissa must, therefore, adopt the method which the U.S.A. adopted in dealing with the problem of its rivers. That method is to Dam Rivers at various points to conserve water permanently in reservoirs. There are many purposes which such reservoirs can serve besides irrigation. I am told that if it were possible to store the entire run off of the Mahanadi it will be enough to irrigate thereby a million acres, provided that much area was available. Water stored in the reservoirs can be used for generating electric power.

"If in the midst of its natural resources. Orissa has remained an industrially undeveloped area, it is due to want of cheap power to run its factories. Here there will be abundance of electric power, more than Orissa can hope to consume for a long time to come. Another use to which this water could be put to is navigation.

"Navigation in India has had a very chequered history. During the rule of the East India Company, provision for internal navigation occupied a very prominent part in the public works budget of the Company's Government. Many of the navigation canals we have in India today - and you have one in Orissa itself - are remnants of that policy. Railways came in later, and for a time the policy was to have both railways and canal navigation. By 1975, there

arose a great controversy in which the issue was railways versus canals. The battle for canals was fought bravely by the late Sir Arthur Cotton - one of the few engineers with big ideas. Unfortunately, supporters of Railways won.

"I am not quite happy about this victory of railways over canals. Much more annoying is the ignorant opinion of supporters of railways that canals must go because they do not pay, without knowing that if the canals do not pay it is not because they cannot pay but because their capacity to pay has been terribly mutilated by leaving them uncompleted. I am sure that internal navigation cannot be neglected in the way in which it has been in the past. We ought to borrow a leaf from Germany and Russia in this matter and not only revive reconstruction of our old canals but make new ones also and not to sacrifice them to the exigencies of railways.

Special Feature

The Labour Member reiterated that the storage scheme, as applied to the rivers of Orissa, will have this special feature, namely, that it will not only give irrigation and electricity, but also provide a long line of internal navigation. "I am told it may be possible to connect Chandbali to Sambalpur and beyond by a navigable inland waterway by construction of, say, some three dams at (1) the point of its debouche from the hills (seven miles above Naraj), (2) Tikkirpara and (3) above Sambalpur. If this plan works out, there will be a navigable channel from 350 miles which could be maintained all the year round, affording a cheap and convenient artery for passenger and goods traffic. Imagine the possibility of coastal craft or light vessels going right into the interior on a canal extending from the sea via Cuttack to Sambalpur and beyond into the Central Provinces. Here is a scheme which converts forces of evil into powers of good.

"Orissa wants to get rid of the evils of floods. Orissa want to get rid of malaria -and other to use American phraseology – 'low income' diseases causing ill-health and corroding the stamina of her people. Orissa wants to raise the standard of living of her people and to advance her prosperity by irrigation, by navigation and by producing cheap electrical power. All these purposes can fortunately

be achieved by one single plan, namely, to build reservoirs and store the water which is flowing in its rivers.

Multi - Purpose Reservoirs

"I am, therefore, glad to note that the Orissa Flood Protection Committee held in 1945, struck the right note when it said that the final solution of Orissa's water problem should be sought in the construction of multipurpose reservoirs. My comment is that this should be regarded as the only method and treated as an immediate programme rather than as an ultimate aim. The potentially of this project may not be clear to everybody. But it is indeed very great. It is desirable that some idea of its immensity should be conveyed to the Government of Orissa, the representatives of the States of Orissa and the People of Orissa as well, so that their interest in the project may be aroused.

"A comparative statement may well give such an idea. One hears of the lake made at the Boulder Dam in the U.S.A. as the biggest man-made lake in the world. We also hear of the Mettur Dam in Madras and the proposed Tungabhadra Dam in Hyderabad, which are likely to be its rivals. Compared with the first, the total volume of water that flows annually through the Orissa Rivers will fill three times the lake mentioned. Compared with the Mettur Dam in Madras and the Tungabhadra Dam in Hyderabad, it may be pointed out that the Mahanadi alone carries over 65 million acre-feet which would be 30 times the capacity of the reservoir at the Mettur Dam in Madras and 20 times the capacity of the proposed Tungabhadra Dam. How much of this water we can economically and effectively store is a matter for investigation. The Government of Orissa, the States in Orissa and the people of Orissa should, therefore, regard themselves as lucky and proud of this project and determine and endeavour to make it a reality".

Dr. Ambedkar continued: "The agenda for the meeting is a very modest one. It is (1) to consider the desirability of undertaking forthwith surveys and investigations of Orissa rivers with a view to the preparation of schemes of unified and multi-purpose development comprising (a) flood control (b) navigation (c) Irrigation and drainage (d) soil

conservation and (e) Power development; (2) to consider the desirability of concentrating, in the first instance, on surveys and investigations on the Mahanadi river for control and development of that river; (3) to examine the desirability of surveys and investigations being carried out by provincial governments in conjunction with and under the general direction of the Central Waterways Irrigation and Navigation Commission.

"Our main purpose today is to see if we can agree on the necessity for a through survey and investigation of the natural resources and physical features of the region with a view to prepare a comprehensive scheme for its development. For a balanced appreciation of the situation it is necessary to carry out comprehensive surveys and investigations with a view to ascertain the possibilities of irrigation, navigation power development and their facilities in the delta as well as in the drainage area as a whole. Investigations so far carried out have been mostly limited to the delta, although some work have been done in 1862 on the survey of dam sites for small reservoirs on the five tributaries of the Mahanadi, namely the Telcoma, the Ibcoma, the Maudcoma, the Hasd and the Jonk.

"The Central Waterway, Irrigation and Navigation Commission constituted by the Government of India under the Chairmanship of the able and well known irrigation engineer, Rai Bahadur Khosla, is shortly going to initiate hydrological and other surveys of Orissa Rivers as part of their enquiry. It will be necessary for Provinces and States to undertake connected surveys in conjunction with and under the general direction and supervision of the Commission".

Submergence of Areas

"Before closing", Dr. Ambedkar observed, "I would like to draw the attention of the parties which have met at this conference to two points. They are intimately connected with the success of the project and about which they will have to the success of the project and about which they will have to make up their mind at an early date. First is their readiness to consider the question of submergence of land. Reservoirs formed by construction of dams will submerge large areas of land, both in Orissa and the

Eastern States. If these dams are carried higher up the river or its tributaries, certain areas in the Central Provinces will also be submerged. This question will need to be considered in detail in relation to the overall benefits of the integrated scheme.

"Submergence of areas will be inevitable if the waters of the rivers have to be conserved for beneficial use instead of being allowed to run waste and to work havoc on route. The resulting benefits from a scheme of united and multipurpose development should far outweigh loss of lands due to submergence. This project can be a success only if it is treated as a regional project. It cannot succeed with a local treatment. The Province of Orissa will fall if it were to take up a project confined to its own boundaries. The same will be the result if an Orissa State were to make a similar attempt.

"The project being essentially regional, it raises the question of submergence of State and Provincial sovereignty to the extent necessary. This is the second question to which I wish to refer. It is for the Orissa States and the Government of the Province to come together in order to shed a part of their sovereignty over different sections of the rivers that are flowing through their territory so that the project could be undertaken, planned, devised and run by a single authority without disturbance either from the Province or from the States once it is established. I need hardly say that the welfare of the public is far more important both to the Government of Orissa as well as to the Rulers of Indian States affected than sovereignty. Their sovereignty should be used for advancing the welfare of the people and not for blocking it. With co-operative and co-ordinated effort on the part of the Central Government and the Provincial and State Governments. It should be possible to harness for beneficial use this perennial source of wealth waters of Orissa Rivers which are at present running to waste and causing untold suffering on their way to the sea."

Survey of Orissa Rivers Conference Decisions

The conference decided to undertake a preliminary surveys of the Orissa Rivers to prepare schemes of unified and multi-purpose development. Multipurpose schemes which may be prepared after this preliminary survey are intended to comprise flood control, navigation, irrigation and drainage, soil conservation and power development. The Conference agreed that, in the first instance, the possibilities of controlling and developing the Mahanadi River should be surveyed. It was further agreed that surveys should be carried out by the Provincial Governments concerned in conjunction with and under the general direction and supervision of the Central Waterways, Irrigation and Navigation Commission.

It was explained that the Commission would, in the beginning, carry out a preliminary reconnaissance over the entire length of the Mahanadi, and if, as a result of such reconnaissance, a prima facie case for the development of the river for the benefit of the Provinces and States concerned was established further detailed survey and investigation would have to be undertaken. It would only be at this stage that full participation of parties concerned, both administrative and financial, would be necessary. Till then the Central Waterways, Irrigation and Navigation Commission propose to carry on preliminary reconnaissance with the help of the recently created Orissa Rivers Division of the Provincial Government. It was agreed that the C.P. Government and the Eastern States would supply the Central Waterways, Irrigation and Navigation Commission with all such data and information as they already possessed and would cooperate fully with them in order to explore the possibilities of the Mahanadi River.

Mr. B.K. Gokhale, Adviser to H.E. the Governor of Orissa, welcoming the plan outlined by Dr. Ambedkar said: "Orissa is perhaps the most backward part of India no single project is likely to do more to improve the conditions of the people than the multipurpose development which we have under contemplation." He outlined the history of Orissa up to modern times, and said that Orissa expected that the thought which had been given to planning and regional development would start her on an era of happiness and prosperity.

APPENDIX D

POST-WAR DEVELOPMENT OF ELECTRIC POWER IN INDIA

Dr. Ambedkar, Labour Member's Address to the First Meeting of the Reconstruction Policy Committee on Public Work and Electric Power, New Delhi, October 25,1943*

Problems relating to the post-war development of electric power in India were discussed by the Reconstruction Policy Committee which met in New Delhi on October 25, the Hon'ble Dr. B.R. Ambedkar, Member for Labour, Government of India, presiding. A number of delegates from the Provincial Governments, leading power States and engineering interests attended the meeting on the invitation of the Central Government.

The Honourable Dr. B.R. Ambedkar, addressing the Committee, said:

Gentlemen, I welcome you to this meeting of the Policy Committee of the Reconstruction Committee No. 3C. A Chairman has both the obligation and the privilege of making an opening speech. The obligation I accept. But I do not wish to abuse the privilege by inflicting upon you a long speech. All I propose to do is to put certain relevant facts into focus so that our attention may be riveted upon them.

For the information of those of you who do not know the machinery set up by the Government of India to study the various problems of reconstruction but whose participation is necessary I would like, If I may briefly, to refer to the plan of work which has been adopted for the better and most expeditious way of carrying out the work taken up by the Reconstruction Committee of Council.

Five Committees

It is, I am sure, within your knowledge that the ex-Viceroy,

**Indian Information, December 15, 1943 p. 337.*

Lord Linlithgow in March last decided to have a Reconstruction Committee of Council under the chairmanship of my gallant friend and colleague the Hon'ble Sir J.P. Srivastava. The Reconstruction Committee of Council has set up five different Reconstruction Committees. Committee No I deals with the Re-settlement and Re-Employment, Committee No II with Disposals, Contracts and Government Purchases. The Work of Committee No. III is partitioned among three Committees- Committee No. III is partitioned among three Committees - Committee No. 3A deals with Transport, No. 3 B with Posts, Telegraphs and Air Communications and No. 3C with Public Works and Electric Power, Committee No. IV is concerned with Trade and Industry, and Committee No. V with Agriculture.

Each of these Committees has a Policy Committee which works under the president ship of a Member of Council which is composed of the representatives of the Central Government. Provincial Government, State Governments and such representatives of trade, industry and commerce as are considered necessary. Each has also an official committee which works under the chairmanship of the Secretary to the Departments and is composed of the Secretaries of other Department concerned. In addition to these two sets of Committees, some of the Reconstruction Committees have a third committee called Subject Committee to deal with technical subjects arising within its field. In addition to these there is an official committee on Social Services and a Consultative Committee of Economists. Such is the plan of work devised by the Central Government to deal with the problems of Reconstruction. Ours is a meeting of the Policy Committee of the Reconstruction Committee No. 3C. The task of this Committee is to study the problems connected with electric power and to make a recommendation as to the best way of solving them.

Before I enter upon an analysis of the problems, there is one question relating to generation of electric power to which I wish to make a reference at any early stage as I wish to get it out of the way. It relates to the question of procurement of machinery, tools and plants that would be necessary for the generation of electrical power. That

machinery will have to be obtained from outside, mostly from Great Britain. The prospect of obtaining such machinery is not free from difficulty. Great Britain would require a great deal of her productive capacity to be reserved for her own needs.

There are other European and Asiatic countries which would be in the British and American markets to acquire the necessary stock of tools and plants. In this competition India may find it difficult to obtain the quota she will need. The safeguard India's position it would be desirable if India could register her orders for tools and plants as early as possible and secure as great a priority as can be done. The difficulties regarding priority may not be very great. I feel quite certain that we can depend upon His Majesty's Government to secure for India high priority in view of the aid she has rendered in this War. But there are other difficulties mainly arising from making up the indents and placing them with the manufacturers as firm orders.

In the first place, electricity is a purely Provincial subject. The estimates as to tools and machinery must, therefore come from the Provinces. The Centre can only sum them up.

In the second place, the type of machinery will depend upon the decision as to the Prime mover that is to be used for the generation of electricity, whether water, steam, oil etc.

The third difficulty arises out the uncertainty of the attitude of the Governments which will come into existence after the war. Will the future Government accept the plans and programmes set out by the present Government? Will the future Governments maintain the level of taxation which the plans and the programmes made by the present Government will require? On these questions one cannot be sure. All the same it seems that this Government would be failing in its duty. If it did not make secure the prospect of India getting the tools and plants necessary for electrification at the end of the war.

Functions of Policy Committee

I mention this matter as being urgent and important. But I am sure you will understand that this is not the matter with which this Committee is primarily concerned. This is

a Policy Committee and our Primary concern is to deal with the problems arising out of the administration production and distribution of electricity and to recommend what we regard as the principles which should guide the future Government of India. We have taken advantage today of our meeting of our Policy Committee to ask Provincial Governments and State Governments to send representatives to this meeting to give us the benefit of their views.

The treatment of electricity as a matter of public concern has passed through many vicissitudes. The Government of India seems to have become aware of it for the first time in 1905 when, I find, a circular letter was issued by it to the Provincial Governments. Thereafter both the Provincial Governments and the Central Government seems to have gone to bed. They woke up when the urgency of active interest in electricity was emphasized by the Report of the Indian Industrial Commission published in 1918 and the Report of the Indian Munitions Board which came out a year later.

The Industrial Commission recommended the necessity for a Hydrographic Survey of India to be undertaken by Government rather than by private enterprise. The Government of India accepted this recommendation and appointed the late Mr. G.T. Barrow, C.I.E, then Chief Engineer, Irrigation Branch, the United Provinces, to take charge of the Hydrographic Survey as Chief Engineer, associating with him in the enquiry Mr. J. M. Meares M.I.C.E., Electrical Adviser to the Government of India. Soon after Mr. Barlow died, and his work was carried on by Mr. Meares who produced three most excellent reports between 1919 and 1922 containing information Province by Province regarding the possibilities of Power Supply under five heads-(1) Water power already developed, (2) plants under construction, (3) areas investigated but not developed, (4) known sites of which detailed examination is desirable and (5) areas and sites not investigated.

Electricity -A Provincial Subject

Unfortunately under the changes made in the Government of India in consequence of the Act of 1919, Electricity became a Provincial subject. That Act unfortunately did not contain a provision as the present Act does of permitting the Central Government to spend its revenues

on matters which it felt fit and proper although they were outside its field of administration. The result was that it became impossible for the Government of India to finance the Hydrographic Survey. A good, great and necessary piece of work for providing India with supply of electrical power came to an end.

There is no officer at the Centre in charge of the development of electricity in India with the result that we at the Centre had till recently no data as to the production, distribution and administration of electricity in India.

I am, therefore, glad that the subject of electricity in India has come up again for serious consideration. So far as I am able to visualize, the questions which this Committee must concern itself with are:-

(i) Whether electricity should be privately owned or whether it should be State-Owned?
(ii) If it is to be privately owned, are there any conditions which it is necessary to impose so as to safeguard the interests of the public?
(iii) Whether the development responsibility for electricity should belong to Central Government or to the Provincial Government?
(iv) If the responsibility is to be of the Central Government what is the most efficacious method of administering it so as to provide cheap and abundant supply of electricity and avoid waste of resources?
(v) If the responsibility is to be of the Provinces whether the administration by the Provinces should be subordinate to an inter-Provincial Board with powers to advice and co-ordinate?

Three Considerations

Every one of these questions has two sides. Each side has its protagonists. I do not wish to express my opinion at this stage. I have an open mind. But it is not an empty mind. All I wish to say is that in coming to our conclusions as to which is the better way of developing electricity we shall have to bear in mind three considerations:

(1) Which of the two will give us power not at a cheaper but at the cheapest price.

(2) Which of the two will give us power which will not merely be sufficient but which will be abundant.

(3) Which of the two will enable India to be equipped with electricity by treating it on the same basis as a strategic Railway, that is to say, as an undertaking which must be started without consideration of immediate profit.

I emphasise these considerations because what India wants is an assured supply of power, cheap power and abundant power.

These are primary questions. There may be some hesitation lurking in the minds of some of you to deal with them on the ground that most of them raise the question of changes in the Constitution. Speaking for myself I feel no such hesitation. There is a difference between deciding a constitutional issue and expressing an opinion on it. We shall not be deciding upon constitutional questions. We shall be only expressing our opinion as regards them. We are not debarred from considering them for the reason that they are of a constitutional nature. I feel quite certain that we cannot avoid them if we want to do justice to the subject which is placed in our charge.

Power Supply Department

Besides these primary questions there are others which are by no means secondary. If electrification is to be a success we cannot leave them out of our consideration. They are:

(1) Whether it is necessary to establish a Power Supply Department at the Centre whose duty would be to make a systematic survey of the available sources of power, namely coal, petrol, alcohol and running water, etc. and to suggest ways and means of increasing generating capacity.

(2) Whether it is necessary to establish a Power Research Bureau at the Centre to study problems connected with the relation between the sources of power and the machinery in order to promote the most efficient use of available power.

(3) Whether it is necessary to adopt some means to train Indians in electrical technology so that India will have a staff to plan and to carry out schemes of construction, maintenance and improvement in electrical plant and machinery.

Before I conclude may I make a few observations pointing out the significance of and the ultimate objective that lies behind the need for electrical development in India? It is necessary that those who are placed in charge of the subject should have the fullest realisation of its significance and its objective. If you agree with me in this I will request you to ask yourselves the question, 'why do we want cheap and abundant electricity in India? The answer is that without cheap and abundant electricity no effort for the industrialisation of India can succeed. This answer brings out only a part of the significance of the work this Committee has to undertake.

Ask another question, 'Why is industrialisation necessary?' and you will have the full significance made clear to you at once; for the answer to the question is we want industrialisation in India as the surest means to rescue the people from the eternal cycle of poverty in which they are caught. Industrialisation of India must, therefore, be grappled with immediately.

Industrialisation of India

Industrialisation of India has been in the air for many years. But one fails to notice any serious drive to bring about industrialisation. There are still some who pay only lip service to it. Others look upon it as a fad, if not a craze. There are very many who are never tired of preaching that India is an agricultural country and therefore the best thing to do is to devote all energy to improve agriculture and not to run after industrialisation.

Nobody needs to be told that India is primarily an agricultural country. Everybody knows it. What is surprising is that very few people seem to realise what a great misfortune it is. I know this will not be readily admitted. What more evidence is wanted to prove that this is a misfortune than the famine which is stalking Bengal and other parts of India and where so many from the

agricultural population are dying daily from want of food or from want of purchasing power?

To my mind there can be no greater proof necessary to show that India's agriculture has failed and failed miserably when it is as plain as anything could be that India which is engaged in producing nothing but food does not even produce sufficient food to feed its people. What is this due to? The poverty of India, to my mind, is due entirely to its being made dependent upon agriculture.

Population in India grows decade by decade in geometrical progression. As against this unlimited growth of population what is available for cultivation is not merely a limited amount of land but a limited amount of land whose fertility is diminishing year by year. India is caught between two sides of a pincer, the one side of which is progressive increase in population and the other is a progressive increase in the deterioration of the soil.

"A Rot Has Set In"

The result is that at the end of a decade we are left with a negative balance between population and production and a constant squeezing of the standard of living. At every decade this negative balance between population and production is increasing in an alarming degree, leaving India with the inheritance of poverty, more poverty and chronic poverty. A rot has set in. This rot, I feel sure, is not going to be stopped by organising agricultural exhibitions or animal shows or by propaganda in favour of better manuring. It can stop only when agriculture is made profitable. Nothing can open possibilities of making agriculture in India profitable except a serious drive in favour of industrialisation. For it is industrialisation alone which can drain away the excess of population which is exerting such enormous pressure on land into gainful occupations other than agriculture.

To sum up, our Reconstruction Committees are no doubt modelled, so far as intention and purpose is concerned, on the Reconstruction Committees which have come into existence in most European countries whose industrial organisation has been destroyed by the Germans. The problems of reconstruction differ, and must differ from country to country. In some countries the

problem of reconstruction is a problem of reconditioning of rundown plant and machinery.

Nature of Problem in India

In some countries the problem of reconstruction is a problem of replacement of tools and plants which have been destroyed in the war. The problem of reconstruction in India must include consideration of all the questions with which other countries engaged in war are concerned.

At the same time we must not forget that the problem of reconstruction in India is essentially different from the problem of reconstruction in other countries. In other countries the problem of reconstruction is a problem of rehabilitation of Industry which has been in existence.

The problem of reconstruction in India, as I see it, is a problem mainly of industrialisation of India as distinguished from the rehabilitation of industry and industrialisation but in the ultimate sense the removal of chronic poverty.

I, therefore, hope that we shall tackle the problems connected with electricity in an earnest and in a statesman like manner thinking it terms of human life and not in terms of the competing claims of the Centre versus the Provincial Government.

I do not like to end on a note of pessimism though the memory of the past efforts of reconstruction is nothing but sad. War seems to give birth to an urge for Reconstruction for the same reasons that necessity gives rise to invention or adversity to belief in God. The pity of it is that this urge which is born out of the war seems to die with peace. That did happen in India with the reconstruction scheme put forth by the Indian Industrial Committee and the Indian Board of Munitions after the last war. I have faith that this time the reconstruction plan will not be allowed to languish and fade away. We have in this war the compelling force of what William James called "the pungent sense of effective reality" of what poverty in India is, which the statesmen of the last War did not have.

APPENDIX E

POST-WAR ELECTRIC POWER DEVELOPMENT

Dr. B.R. Ambedkar, Labour Member's Address to the Second Meeting of the Reconstruction Policy Committee on Public Work And Electric Power, New Delhi, February 2, 1945*

A schedule of heavy power equipment required by India as soon as possible after the cessation of hostilities has been prepared and steps have been taken to reserve for India the necessary manufacturing capacity, said the Honourable Dr. B.R. Ambedkar, Labour Member, Government of India, in his address to the second meeting of the Policy Committee on "Public Works and Electric Power" held in New Delhi on February 2.

Here is the full text of Dr. Ambedkar's speech:

I should like to begin by extending to all the representatives, old and new, present at this meeting a most hearty welcome. I say old and new because we have on our Committee new members who were not on the Committee when we met last. They are the nominees of the Federation of Electrical Undertakings in India and of the Indian Trade Union Congress. Electrical undertakings and organised labour are both vitally concerned in the future of electrical development in India and whatever they may have to say about the subject must receive due consideration in any decision that may be arrived at. I am sorry that an omission to have them with us should have occurred last time. I apologise for it, for it was indeed a very serious omission. I am sure we are all very glad to have them with us today and will be looking forward to their contribution to the discussion of the subject we have before us.

* Indian Information, February 15, 1945, pp. 235-41.

Power Engineers' Conference

I believe it would be of some advantage if I were to begin the few observations I have to make as Chairman by referring to what has been done by the Government of India in furtherance of the post war planning for electrical development since the Committee last met on October 25, 1943, as most of you may have no knowledge about it. Soon after the last meeting of this Policy Committee. Mr. Mathews, the Electrical Commissioner with the Government of India, with the approval of Government, called together a Conference of leading power engineers in the country, both official and non-official to consider post-war electric power development. The first thing the Conference did was to prepare a schedule of the heavy power equipment required by India for electric development immediately after the war. In addition to this the Conference passed certain resolutions all of which to use the language of the report, "represented the unanimous conclusion of their studies, investigations and discussion." These resolutions fell under four heads:-

(i) Under the first come recommendations which set out some general and specific suggestions to the Provinces and States to be observed by them in regard to electrical development within their jurisdiction.
(ii) Under the second were grouped those which concerned the appointment of the Technical Power Board.
(iii) Under the third came those related to certain prospective power developments considered by the Conference to be prima facie worth investigation without delay.
(iv) Under the fourth head were placed those which relate to railway electrification, manufacture of synthetic fertilisers and rural electrification.

As the members of the Conference said in the letter accompanying their findings, "this is the first occasion on which the power development programme has been reviewed as a coordinated whole and that the presence of engineers whose experience covers in the aggregate the varied conditions of the whole of India, has introduced an extremely valuable element in co-ordinating regional needs."

Heavy Power Equipment

I am sure you will agree that we owe the Conference a great debt for unfolding to us the prospective electric power development for the whole of India in the period immediately succeeding the cessation of hostilities in such clear cut manner. The Conference asked the Government of India to take appropriate action on the several recommendations made by them. The two recommendations in regard to which action lay with the Government have been already put into effect. They relate to the securing of equipment and the establishment of Technical Power Board.

A schedule of heavy power equipment required by India as soon as possible after the cessation of hostilities has been prepared and steps have been taken to reserve for India the necessary manufacturing capacity. The total capacity reserved comes to over 850 megawatts, at an estimated cost of Rs. 50 crores approximately. The aggregate of new capacity represented by these schedules comes to nearly 65 percent of India's existing installed capacity. A more detailed inquiry might show that our requirements for equipment are larger than what has been booked for. But as it was impossible to delay the matter without putting India's interest in grave jeopardy. We had to take action immediately on such data as could be collected within the limited time that was available to us.

Technical Power Board

As you must have noticed from the Press Note issued on November 8, 1944, the Government of India has constituted a Technical Power Board. Besides the Chairman, the Board will initially have two full-time members and three part time members. The Government of India has appointed Mr. Mathews, Electrical Commissioner with the Government of India, as the Chairman and has obtained the services of Mr. W.L. Voorduin form the United States of America as another member of the Board. Before he came to India, Mr. Voorduin was employed as a Project Officer of the Tennessee Valley Authority. It is proposed to have a third member to be called the Utilisation Member. Effort is being made to recruit a suitable Engineer who is

conversant with Utilisation. These appointments of high level experts will assure you how very anxious the Government of India is to make the Board a strong technical organisation designed to collect ideas, conduct surveys and prepare schemes for electrical development in consultation with the Provincial and the State Governments. I have referred to this because it is necessary you should know what has happened in the interval and also to show that the Government of India has been pursuing the matter in all earnestness and with all speed.

The Triple Programme

There is another important development in electrical policy to which I would like to draw the attention of all of you here. You will recall that at the last meeting of the Policy Committee, Mr. Collins, on behalf of the Bombay Government made certain reference to the contemplated introduction of the "Grid" system in the Bombay Presidency. During the last year, we in the Government of India have given a great deal of thought to the regional as distinguished from the local development of electricity in different parts of this country. We have felt more and more that if the services offered by electricity are to be brought to the door of producers as well as the consumers at the cheapest possible rates compatible with efficiency, we may have to follow albeit cautiously and gradually, the triple programme on which the Central Electricity Board in the UK have worked from the very beginning viz.:-

(a) The creation of large-scale power stations located in the main industrial areas under the control of public supply undertakings;

(b) The construction of main transmission system (with smaller secondary lines attached to it for tapping agricultural and other outlying areas) so that the entire region to be developed by the main system can be held in a power ring or a series of power rings radiating out from the large scale power stations; and

(c) Standardisation of frequency as far as possible within the region to be developed by the power system.

This triple programme constitutes the foundation of the "Grid" system, as we know it, to be operating in the

U.K. since 1926 and it is my hope that if such a scheme of regional development is adopted in this country, we may before long bring the great boon of cheap electricity service to the door of every one, high or low.

You may be interested to know that when the "Grid" system on a large scale was first contemplated in the U.K. it was estimated that by 1940-41 the national production of electricity would reach the colossal figure of 25, 000 million units and the working cost of electricity would by that date fall from 9.4d, as recorded in 1925-26 to less than 4d. per unit, while the large industrial consumer would be able to obtain his power requirements at 1/2d.

Items on Agenda

I will now turn to the Agenda for our meeting today. As you will see, there are altogether four items on the Agenda. Item 4 places before you for your consideration two schemes, one for the Technical Power Board and the other for sending Indians to foreign countries for training in electricity. Neither is a controversial subject. I will not therefore take your time in dwelling upon them.

Item 2 on the Agenda is unfortunately not quite so uncontroversial as item 4. Item 2 relates to the question of applying to electrical undertakings certain accounting principles of ascertaining their income, expenditure and profits. This item is not as controversial as it appears. The issue raised by this item covers two questions and not one, and the controversy would be very much narrowed if they were considered separately.

The first question is whether the dividend of an electricity supply undertaking should or should not be related to the charges for consumption of electricity. The second question is how to determine reasonable dividend. On the first question, I venture to say, there can be very little dispute. Electricity is to be a prime necessity of the people both for production and consumption. The price of such a prime necessity cannot therefore be at the will of the supplier. The whole industrial future of India will be put in great jeopardy if India could not ensure cheap and abundant supply of electricity. The necessity of correlating dividends to charges is therefore paramount. If this is granted, the necessity of enforcing rules of accounting

which will give the undertaking reasonable return but no more and choke all holes for concealed profits cannot be disputed.

Principles of Accountancy

The issue then becomes a secondary one. In pressing for enunciating principles of accountancy we are not introducing any revolutionary idea. We are following the lines laid down in British Legislation on Electricity contained in the London Electricity Act of 1925 and the Electricity Supply Act of 1926. The Electrical Commissioner with the Government of India has drawn up a Memorandum in which he has proposed a set of such accountancy principles for being applied to electricity undertakings. His memorandum was circulated to the Provincial governments and to Electrical Undertakings for their opinions. There has been unfortunately some divergence of opinion. As a means of bridging the gulf, the Government of India proposes to appoint an Advisory Board to advise on principles which may be just and proper. I hope you will regard this solution as a satisfactory one.

There remain items 1 and 3 of the Agenda. They are indeed the most important items of our Agenda and you will bear me if I take some of your time to deal with them. With regard to item 1, it might be well to refresh your memory by telling you how the position stood at the last meeting of the Policy Committee. At the close of the discussion of the items on the Agenda the Policy Committee desired that the Labour Department should draft a Resolution embodying the measure of agreement reached and that it should be placed for discussion at a subsequent meeting of the Policy Committee. A draft Resolution was accordingly drawn up which is in the following terms:-

"That this meeting recommends that the further development of electricity supply in India be actively pursued as a State or quasi-State enterprise and that steps be taken to eradicate any factors that retard the healthy growth of electrical development in the Provincial, State or Local authority owned undertaking as well as the commercially owned undertakings".

It was felt that the draft Resolution was not very clear. The Resolution spoke of further development. It said nothing about the undertakings that have already come into existence. The Resolution spoke of the necessity of controlling factors likely to hamper or retard the healthy growth of electrical development but did not specify what the factors were. It was therefore felt desirable that the Committee clear up elements of doubts. This is how item 1 comes to be what it is.

State Control and Ownership

The discussion at the last Policy Committee meeting seemed to indicate clearly the intention that electrical supply enterprise in areas where there is none at present should be pursued as a State or a quasi-State enterprise; but there remained an element of doubt as to the extent to which the State should come in those areas in which electrical undertakings were already functioning. For instance, is it advisable that the State or other authority should as a general rule exercise an option to take over an undertaking whenever under the terms of an individual license such option arose? And is it advisable that the State should exercise control over existing privately owned undertakings for the purpose of securing bulk supply for regional development or control of generation? There may be cases in which in order to secure suitable regional development bulk supply from some other undertaking should be given to some existing undertaking and that it may be that the manner in which an existing undertaking operates and expands may have to be brought into line with general schemes for regional development. We wish, therefore, in this discussion to get clarification not only as to the extent to which State ownership should come in but also as to the extent to which the State should control where State ownership cannot immediately become operative.

Jevon's Economic Criteria

The issue between State enterprise and private enterprise has ever been a matter of controversy. This controversy is now resounding in India in full blast since we have started the project of planned economy. Old Jevons in his tract on

State in relation to Industry, attempted to formulate certain economic criteria by which the line between State enterprise and private enterprise can be drawn and which have been the gospel of the opponents of State enterprise. According to Jevons, there were four criteria which ear marked an industry for State ownership. They were (i) small capital account: (ii) Routine operations (iii) the co-ordination of several services such as Posts, Telegraphs and Telephone; and (iv) the sufficiency of a single all embracing plant as in the case of water and gas supply.

The followers of Jevons in this country propose to add some more criteria, the object of which is to restrict the field of State enterprise except in one case, viz., they are prepared to enlarge the field by allowing the State free field in such cases which could not be profitable for private enterprise to undertake. The controversy may have had some solid basis when private enterprise was a fact. But today private enterprise is only a phase. There is nothing private in an economic order when industry is carried on by huge Public Joint Stock Companies. There is nothing of individual enterprise in an economic order where the slogan of a business firm is caution and not adventure and where the prime consideration is to stabilise profits by seeking to maintain in an orderly permanence existing economic conditions. It is unnecessary for me to enter into this controversy. For there are very few opponents of State Ownerhsip and State control who do not make an exception in the case of the electricity.

Item 3 raises the question as to who should exercise the option when it falls due by reason of the termination of the license issued to an electrical undertaking for the supply of electricity. The matter of purchasing an electrical undertaking is now regulated by the provisions of Section 7 of the Indian Electricity Act. According to this section, the authority to exercise the option to purchase vests in the first place with a Local Authority and where the Local Authority does not elect to exercise the option it passes to the Provincial Government. The question raised by item 3 on the Agenda is whether it is not desirable that option should also be given to the Central Government and, if so, at what stage and under what conditions. It is proposed that the Central

Government should also have an option to purchase. Having regard to the fact that electricity is a public utility, there ought to be no difficulty in vesting the Central Government with such an authority.

Provincial or Central Control?

Unfortunately there seems to be some reluctance to accept this principle. Planning in India has been confronted with two issues, the issue of State versus Private enterprise and the issue of Provincial or Central control. With both issues we are all quite familiar and item 3 deals mainly with the second issues. To those who believe in State enterprise it should be a matter of small consideration whether the enterprise should be Provincial or Central and little or no objection should be raised to Central control in cases where a Province does not desire to take on such control, or where in the interests of regional development extending beyond the boundaries of a Province, Central control may be considered necessary. In the case of electricity, as in the case of waterways, suitable schemes cannot be limited by Provincial boundaries, and though there must clearly be the closest co-operation and co-ordination between the Centre and the Province, it does seem advisable that the Centre should be able to step in cases where State control is found necessary for regional development and where a Province does not itself wish to bring an undertaking under State control.

I don't think I can usefully add anything to what I have already said about questions arising out of the Agenda However before I close, I would like to say how very necessary it is for you to bear in mind that whatever decision you take must accord with the public opinion in the country regarding the future of Indian economy. It would be a mistake to suppose that there is no Indian public opinion on the future of Indian economy because one does not hear of it much. I am sure there is. What that opinion is I do not wish to dogmatise although I am sure that it is far more Leftist than many are inclined to allow.

The point I am anxious to emphasize is that the need for an accord between the plan and public opinion can hardly be exaggerated in a country like India which has as its ideal a Parliamentary system of Government. People

talk about the success of planning in Russia. But they forget that the success is due largely to the fact that Russia has no Parliamentary Government. Planning in a Parliamentary. Planning in a Parliamentary Government where those who plan live under the constant threat of no confidence motions and cannot be sure whether they can remain long enough to put their plans through is a very large doubtful proposition. Whether planned Economy is inconsistent with Parliamentary democracy and, if it is so, how the two can be reconciled is a very large theme and this is not the place to deal with it. All, therefore, I wish to do is to caution you that if our plans are not to be scrapped by our successors, we must take care that they are in accord with what the large majority of people believe to be for the greatest good for the greatest number.

Committee's Recommendations

The Policy Committee on "Public Works and Electric Power" recommended that the development of electricity supply for areas outside existing licensed areas should be actively pursued, as far as possible, as a State or quasi-State enterprise. If for any reasons the State was not prepared to undertake such development in any area within a reasonable time, private enterprise should not be excluded. They further recommended that, provided efficient and economic operation could be assured to the public, options existing under any license to acquire an undertaking should, as a general rule, be exercised when they arose. Steps should be taken to eradicate any factors that retarded the healthy and economic growth of electrical development on regional lines whether in Provincial, State or local authority owned or in commercially-owned electrical undertakings.

In another recommendation the Committee accepted the necessity of laying down financial principles for the control of electric public utilities both in the interests of public utilities be set up under Section 35 of the Electricity Act to advise Government on the nature, extent and method of application of such principles. On this Advisory Board there should be two representatives of the Central Government, two representatives appointed by agreement with the Provinces, and one representative of the Federation of Electricity Undertakings. The Board may appoint such accessors as may be necessary.

The discussion on the proposal to amend Section 7 of the Indian Electricity Act of 1910, with a view to evolve a systematic and coherent policy for planning electrical development, raised a number of points for examination by the Central Government. The Committee agreed that the Act should be so amended as to give the Provincial Government the first option to take over an undertaking. The question of amending the Act so as to give power to the Centre to take over electric undertakings, if Central control was considered necessary for inter-Provincial development, was discussed. There was difference of opinion on some aspects of the question, and it was decided that the matter should be further examined in consultation with the Provinces.

Government's Training Schemes

The Policy Committee welcomed the appointment of the Central Technical Power Board, and the Central Government's scheme for sending ten Indian engineers to receive training abroad on the commercial and administrative side of electricity supply industry. Four of these officers will receive training in the U.K., four in the U.S.A. with the Tennessee Valley Authority, and two in Canada. Two officers belong to the Central Government, four to Provincial Governments, two State Governments and two to Public Electricity Supply Undertakings. The Government of India will bear the entire cost of the training of the two Central Government Officers. It was stated that while under this scheme Indian engineers would be trained in the commercial and administrative aspects of electrical industry, Government intended to send two more batches for training in the technical aspects.

The meeting which was presided over by the Hon'ble Dr. B. R. Ambedkar was attended by the Hon'ble Sir Ardeshir Dalal, Planning and Development Member, Government of India, the Hon'ble Rai Bahadur Gokuldas, Minister for P.W.D. (Sind) , Sir Mirza Ismail and Raja Dharam Karam Bahadur. Official representatives of the Central and Provincial Governments and non-officials representing the All-India Trade Union Congress, Federation of Electrical Undertakings and Indian Engineering Association also participated in the discussion.

APPENDIX F

PRESENT STATUS OF WATER RESOURCES DEVELOPMENT

Introduction

Water is a major component of the environment in which man occupies the central place. Water is life, not only per se. Apart from the need for drinking, water is needed for producing food and fibre. Water also is needed to produce energy – hydro, thermal and nuclear. This great need for water has brought into focus the necessity for developing our water resources so as to meet the increasing need for water from day to day. India has made tremendous progress during the six decades since independence in the development and management of its water resources. Not only India's economy, its social structure is also based upon agriculture. In the areas of agricultural production, the rapid development in irrigation facilities, coupled with introduction of better yielding crop varieties and increased use of fertilisers, has made the country achieve self-sufficiency in food. From a level of 15 million tonnes in 1947, grain production has increased to over 257 million tonnes at present. Similarly strides have been made in the field of hydro-electric power generation, domestic water supply, industrial water supply and other uses.

India's Water Resources

India, with a geographical area of nearly 3.29 million sq.km experiences extremes of climate. Normal annual rainfall varies from 100 mm in western Rajasthan to over 11800 mm at Mawsynram in Meghalaya. The variability of rainfall from season to season is also very high. India receives an average precipitation of about 1170 mm which corresponds to an annual precipitation of 4000 billion cubic metre (BCM). There is considerable variation in precipitation both temporally and spatially. Nearly 75% of this i.e. 3000 BCM occurs during the monsoon season confined to 3 to 4 months (June to September) in a year.

As per the assessment made by Central Water Commission in the year 1993, the average annual water availability in the country is 1869 BCM. The remaining water is utilised through evapotranspiration from forests, natural vegetation, rainfed agriculture, and some of it is lost through evaporation in natural ponds and lakes etc. It is estimated that owing to topographic, hydrological and other constraints, the utilizable water with conventional approach is 1123 BCM which comprises of 690 BCM of surface water and 433 BCM of replenishable ground water resources. The average annual water availability/utilizable surface water resources potential in various basins is as below:

S. No.	River Basin	Catchment area (Sq.Km)	Average Water Resources Potential (BCM)	Utilisable surface water resources (BCM)	WR Potential per unit area of the basin (MCM/sq.km)
1	Indus	321289	73.3	46	0.228
2	Ganga-Brahmaputra-Meghna				
	(a) Ganga	861452	525	250	0.609
	(b) Brahmaputra	194413	537.2	24	2.763
	(c) Barak & others	41723	48.4		1.160
3	Godavari	312812	110.5	76.3	0.353
4	Krishna	258948	78.1	58	0.302
5	Cauvery	81155	21.4	19	0.264
6	Subernarekha	29196	12.4	6.8	0.425
7	Brahmani-Baitarni	51822	28.5	18.3	0.550
8	Mahanadi	141589	66.9	50	0.472
9	Pennar	55213	6.3	6.9	0.114
10	Mahi	34842	11	3.1	0.316
11	Sabarmati	21674	3.8	1.9	0.175
12	Narmada	98796	45.6	34.5	0.462
13	Tapi	65145	14.9	14.5	0.229
14	West Flowing Rivers from Tapi to Tadri	55940	87.4	11.9	1.562

S. No.	River Basin	Catchment area (Sq.Km)	Average Water Resources Potential (BCM)	Utilisable surface water resources (BCM)	WR Potential per unit area of the basin (MCM/sq.km)
15	West Flowing Rivers from Tadri to Kanyakumari	56177	113.5	24.3	2.020
16	East Flowing Rivers between Mahanadi and Pennar	86643	22.5	13.1	0.260
17	East Flowing Rivers between Pennar & Kanyakumari	100139	16.5	16.5	0.165
18	West Flowing Rivers of Kutch and Saurashtra including Luni	321851	15.1	15	0.047
19	Area of Inland Drainage in Rajasthan	---	Negl.	--	---
20	Minor Rivers draining into Myanmar (Burma) and Bangladesh	36302	31	--	0.854
	Total	**3290000**	**1,869.4**	**690**	**0.568**

From the above, it can be seen that there is wide variation in WR potential per unit area of the basin. Therefore, basins in western and southern parts of the country will be either water-stressed or water-scarce basins. A closer look on the above table would reveal that Brahmaputra basin has high water availability and utilisable part is just 4.5% of that. Whereas other basins such as Tapi, Cauvery, Pennar and Kanyakumari have almost 100% utilisable part of WR potential.

Water Resources Development Doctrine for the Country

The foregoing paragraphs indicate that a significant numbers of basins and consequently substantial area of the country will not have adequate water resources for their sustenance and development in the context of ever increasing demands resulting from the population growth and economic growth. Simultaneously, the other growth factors like availability of land and energy sources as well as other minerals make the water-short basins better candidates for development, thereby multiplying the shortages. Thus, it is inevitable that such basins will not only need resilience towards floods and droughts from creation of appropriately-sized storages but may also need support from the adjoining basins so as to sustain the development and livelihoods.

Due to small storage capacity, small reservoirs, tanks, ponds, check-dams, etc, their resilience against the hydro-meteorological extreme events (floods and droughts) is quite poor as compared to a large multi-purpose reservoir. Due to more surface area per unit volume of stored water exposed to atmosphere, smaller reservoirs involve higher evaporation losses as well as have lesser lifespan.

It is in this context, the Inter Basin Water transfer programme better known as Inter Linking of Rivers programme was conceived. The programme is based on creating relatively large storages to build resilience in the system and also provide an aggregate storage capacity needed for the country in an area where the topography and geology provide favourable conditions.

Present Scenario of Water Use

Irrigation: Faced with a rainfall season with a few rainy days, agriculture in India is heavily dependent on irrigation. The principal consumptive use of water is in irrigation. The net sown area in the country increased from about 119 million hectares (MHa) in the year 1950-51 to about 140 MHa in 1970-71 and has remained more or less constant thereafter.

The gross irrigated area in the country was only about 32 MHa in 1950-51. As compared to this, the potential that has been created upto 2006-07 (i.e. up to the end of

the Tenth Five Year Plan) is about 103 MHa (57 MHa irrigated by surface water and 46 MHa irrigated by ground water) against an ultimate total irrigation potential of 140 MHa. Plan-wise irrigation potential created and utilised is given in the Table-1.

Hydro Power: The hydropower potential of the country that could be economically set up on dependable water resources of various river basins of the country is estimated as over 84,000 MW at 60 per cent load factor equivalent to 1,48,700 MW of installed capacity and generation of 440 billion units per year. The various hydroelectric schemes currently in operation harness only about 24 per cent of the potential. The schemes under construction would add up another 7 per cent. A further 3 per cent of the potential can be tapped by schemes which are technoeconomically cleared and are awaiting investment decision. More than three-fourths of hydro power potential is thus awaiting detailed investigations, and funding.

The beginning of hydro power development in India was marked by commissioning of 200 KW plant near Darjeeling as the turn of the country, followed by a 4500 KW installation at Sivasamudram commissioned in 1902. Subsequently the Tata Power Company development Khopli (72 MW), Bhivpuri (72 MW) and Bhira (132 MW) in the Western Ghats during the early part of the current century. In spite of an early start, progress has been slow. The total hydro installation at the time of independence in 1947 was only 508 MW. The total installed capacity through all sources as that time was 1362 MW. The development of hydro power got an impetus in 1951, when several multipurpose river valley projects were taken up which included some single purpose hydro power generation projects.

There was intensive activity in the first three Five Year Plans, which included projects like Bhakra Nangal, Hirakud, Chambal, Damodar, Rihand, Koyna, Periyar, Sabrigiri, Kudah, Sharawathy, Machkund, Upper Sileru Balimela, Umium, etc. Ambedkar had played an important role in the planning of Damodar, Bhakra Nangal and Hirakud multipurpose projects. The total installed capacity of hydro power stations rose to 5900 MW and the

total power capacity from all sources to 13000 MW by the end of the Third Plan. The share of hydro in the total installed capacity reached 50 per cent during the period which was the highest so far. Central Government participation in the hydropower sector began in the Fourth Plan enabling initiation of major projects like Baira Siul, Salal, Loktak and Kopili in remote areas. By the end of the Sixth Plan, the hydro installation capacity crossed 21400 MW. The important hydro projects commissioned after the Sixth Plan are Salal, Kopili, Sanjay (Bhaba), Pench, Kadana, Srisailam I and II, Nagarjunasagar I and II, Varahi, Akadamparal, Upper Kolab, Rengali and Hirakud III. Today the total installed capacity of the country's hydro power stations are about 38,000 MW and the share of hydro in hydro-thermal mix has gone down to 16%.

India's hydroelectric and other river valley projects show wide diversity in almost every technical aspect such as storage schemes, run-off, river schemes, canal fall schemes and pumped storage schemes. They include major (more than 15 MW), minor (1 MW to 15 MW), mini (0.1 to 1 MW) schemes, utilising heads from as large as over 1,000 metres to as small as 2 metres.

Other Uses: The quantum of water being used for other purposes is far less than that used for irrigated agriculture. The requirement of water for community water supply, for instance, is only about 5 per cent of the total water use, but it is the most important requirement. AS per the Census Report-2011, the total population of India is 121 crores. The total urban and rural population of the country as per the census are 37.7 crores and 83.3 crores respectively.

Inter Basin Transfer of Water

Dr Ambedkar was of the opinion that the Krishna, Godavari and Tapi waters should not go waste to the sea. He had even suggested interlinking of these rivers. Though no work could be initiated in his tenure as Labour Minister, inter basin transfer of water from surplus basins to deficit basins is being planned in post-independence India and transfers are already taking place in some river basins in India. The Navagam canal of the Sardar Sarovar

project, and Indira Gandhi Canal bringing water to Rajasthan are excellent examples of realisation of Dr Ambedkar's dream of mass transfer of water to water short river basins. Elsewhere also, Large-scale transfers will become inevitable in the future to meet the growing demands in the deficit basins.

At the time of independence, the country had a population of about 400 million and faced severe food crisis. At that time the irrigation potential of the country was only about 20 MHa. After independence massive programme of irrigation was launched for development and utilization of both surface and ground water resources. This resulted in green revolution, which helped to transform the country from the state of food scarcity to food self-sufficiency. Due to these massive efforts, by the year 1979 the irrigation potential of the country could increase to 57 MHa. With the use of high yielding varieties possible under irrigation and with increased use of fertilizers, the food production of the country could be increased to about 125 million tonnes by the same time. However, rate of increase in food production could just match to equal the rate of population growth.

The water is main input to the agriculture and also an important element for the life of human kind, its optimal utilization is necessary. With a view to harness the water resources of the country optimally, Dr. K.L. Rao, the then irrigation Minister, in the year 1972 had mooted the idea of interlinking of rivers by connecting the Ganga with the Cauvery River. Subsequently, in 1977 Capt. Dastur initiated the concept of a "Garland Canal" around the Himalayan, Central and Peninsular India. The proposals although received very good response from all sectors of communities, but not found techno-economical feasible for implementation.

The continued interest shown by many people engaged in Water Resources Development gave further impetus to study inter basin water transfer proposals in more details. The then Ministry of Irrigation (now Ministry of Water Resources, River Development and Ganga Rejuvenation)) and Central Water Commission formulated a National Perspective Plan (NPP) for Water Resources Development in 1980, envisaging inter basin transfer of water from

surplus basins to deficit ones with a view to minimize the regional imbalances and optimally utilize the available water resources.

National Perspective Plan comprises of two components viz. Himalayan Rivers Development and Peninsular Rivers Development. National Water development Agency (NWDA) has identified 30 inter-state links (14 under Himalayan Component and 16 under Peninsular Component) for inter-basin transfer of water. A total quantity of about 200-250 BCM is proposed to be transferred from one river basin to other by these proposed inter-basin-transfer links under Himalayan and Peninsular components by utilizing storage capacity of various existing, under construction or proposed dam projects. The National Perspective Plan would give additional benefits of 25 MHa of irrigation from surface waters, 10 MHa by increased use of ground water, totaling to 35 MHa and 34,000 MW of hydro-power generation. In addition, the likely incidental benefits of Mitigation of Droughts, Flood Control, Domestic & Industrial Water Supply, Navigational Facilities, Employment Generation, Fisheries, Salinity Control, Pollution Control, Recreation Facilities, Infrastructural Development, and Socio – Economic Development would also accrue.

Flood Management

The Rashtriya Barh Ayog (National Floods Commission) constituted in 1976 assessed 40 MHa in the country as flood prone. Out of which 32 MHa are reported to be reasonably protectable. On an average, about 7.15 MHa area is affected by floods annually.

Since 1951, when the First Five year was launched till March 2011, the country has invested around Rs 126000 crores (at 2011 price level) on flood management programmes consisting of various structural and non-structural measures providing reasonable protection to 18.8 MHa area in the country. The structural measure of flood management measures includes construction of storage reservoirs with or without flood cushion, embankments, flood diversion channels, improvement of flood carrying capacity, detention basin, watershed

management, etc. The non-structural measures include flood forecasting, Flood Plain Zoning, Preparedness and flood fighting, etc.

Physically, upto 2011, 10 dams out of more than 5100 large dams constructed have specific flood cushion. 35200 km of embankments and 39710 km of drainage channels have been constructed. 7713 villages have been raised/protected through 2802 Town/village protection works executed. 65 raised platforms have also been constructed in chronically flood affected villages.

Reliable forecasting and forewarning on day to-day flood situation is well recognized as one of the foremost and cost effective non-structural measures in flood loss mitigation. The Central Water Commission has been playing a pioneering role in flood forecasts through a national network of 148 level forecasting stations for towns and 28 inflow forecasting stations for reservoirs. Through this network concerned authorities as well as the public in 17 states, one Union Territory and NCT Delhi is provided with timely forecast of impending flood through various means of communication such as Emails, SMS, Website, etc. These forecasts form the basis for alerting the public and taking appropriate measures by the administrative agencies concerned in mitigating the effect of flood event. The network is under further expansion to cover uncovered areas, modernization for sensor based data collection & satellite based transmission, mathematical flood forecasting modeling using hourly hydro meteorological data, remote sensing data, etc for increased lead-time & inundation forecasting, web based & radio/electronic media based forecast dissemination for wider publicity.

Central Water Commission is also providing the advisory forecast for Glacial Lake Outburst Flood for potentially dangerous glacial lakes in Himalayan region. In this regard the work of monitoring of glacial lakes/water bodies was taken up by Central Water Commission during XI plan period. The inventory of glacial lakes /water bodies having water spread area more than 10 ha has been prepared in association with NRSC using remote sensing and GIS techniques and published in June 2011. The information includes location of the lake (Latitude,

Longitude and Elevation), name of lake (if available) and water spread area. Glacial Lakes / Water Bodies having water spread area of more than 50 Ha are being monitored every year during the monsoon period June to October since 2011. The monitoring, at present, involves measurement of water spread area of the Glacial Lakes / Water Bodies using satellite images from Advanced Wide Field Sensor (AWiFS) of Indian Remote Sensing Satellite Resourcesat-1. The monitoring report are prepared on monthly basis and distributed to all concerned both at centre and states.

Flash floods due to land slide dam breach becomes a major concern for the people residing downstream. As formation of landslide dams is a natural phenomena, they are vulnerable to failure by overtopping and consequent breaching. In past a number of flash flood events due to breaching of landslide dams occurred on river Parechu/Satluj, Kurichhu, Sunkosi, Phuktal etc. For an effective disaster management planning, it is essential to have a realistic estimate of lake volume formed behind landslide dam, dam break flood magnitude, its travel time and possible rise in river water level at different downstream locations in the event of dam breach. Whenever, land slide dam events are reported to Central Water Commission, necessary simulation studies are carried out to estimate the above parameters and report is made available to National Disaster Management Authority (NDMA) for formulation of an effective disaster management strategy.

Basin Level Integrated Water Resources Management (IWRM) initiatives

Integrated Water Resources management (IWRM) as a philosophy has been accepted and applied around the Globe. IWRM approach entails complete water resources assessment, planning and allocation of resources in an optimal framework. The optimization of the identified water resources is from a perspective of ecological balance along with human consumptive needs keeping in view the uncertainty and variability of our country's monsoon which underscores an IWRM based framework for proper

planning and management of water resources in our country.

The National Water Policy-2012, in several provisions, has enumerated the integrated perspective of water resources planning, development and management. One of the basic principles of the policy is that planning, development and management of water resources need to be governed by common integrated perspective considering local, regional, State and national context, having an environmentally sound basis, keeping in view the human, social and economic needs.

The Policy under para 2.3 states that there is a need for comprehensive legislation for optimum development of inter- State rivers and river valleys to facilitate inter-State coordination ensuring scientific planning of land and water resources taking basin/sub-basin as unit with unified perspectives of water in all its forms (including precipitation, soil moisture, ground and surface water) and ensuring holistic and balanced development of both the catchment and the command areas. Such legislation needs, inter alia, to deal with and enable establishment of basin authorities, comprising party States, with appropriate powers to plan, manage and regulate utilization of water resource in the basins.

Highlighting the importance of integrated water resources management, the policy under para 12.4 states that Integrated Water Resources Management (IWRM) taking river basin / sub-basin as a unit should be the main principle for planning, development and management of water resources. The departments / organizations at Centre / State Governments levels should be restructured and made multi-disciplinary accordingly.

Initiatives Taken by MoWR, RD & GR towards implementation of IWRM

River Basin Management Bill

As a follow-up of National Water Policy, MoWR, RD & GR constituted a Committee under the Chairmanship of Justice Tejinder Singh Doabia to study the activities that are required for optimal development of a river basin and changes required in the existing River Board Act, 1956 for achievement of the same. The report of the Committee

containing the draft River Basin Management Bill, 2012 was submitted in November, 2012 to the Ministry. The bill envisages formation of River Basin Organizations for specified inter-state river basins of the country for sustainable use and judicious management of water resources of the basin in an efficient manner. The same is under process of approval for induction in Parliament.

Integrated Water Resources Development and Management Guidelines

The guidelines on 'Integrated Water Resources Development and Management' have been prepared in CWC under strategy V.4 of National Water Mission after wide consultation with all stakeholders, e.g. Central Govt. departments, State Govts., international organisations, experts and academic institutions, etc. The guidelines were, circulated to all States and Union Territories for their views and observations. Some States and organizations submitted their views and the same were suitably incorporated in the guidelines. Thereafter, the draft guidelines were discussed and deliberated upon with various stakeholders including State Govt during a workshop on IWRM organized by World Bank in New Delhi in Feb, 2015 along with various international experts. The guidelines will soon be uploaded on CWC website.

IWRM studies of Brahmani-Baitarni basin

The Government of India and Government of Australia entered into a Memorandum of Understanding (MoU) in the field of Water Resources Management (signed on 10th November, 2009 at New Delhi) with a validity of five years. A Joint Working Group (JWG) having six members each from both the sides was constituted to monitor the activities being carried out in fulfilment of the MoU. One of the activities identified in the Action Plan was to collaboratively develop a Project Plan for Integrated Water Resources Management and Planning, drawing together key policy, scientific and information inputs for a river basin in India.

Keeping in view the potential of Water Resources Development and being an inter-state and also water-dispute-free river basin, Brahmani Baitarani river basin

was selected for the Project. It is also of the appropriate size for the purpose of carrying out such study on pilot basis. Three States involved-Jharkhand, Odisha and Chhattisgarh agreed to the proposal and nominated their nodal officers for taking up the study for development of the Integrated Water Resources Management (IWRM) Plan. The studies are likely to be completed by June-2016.

Future Needs

Total water requirement of the country in high demand scenario for different uses for the years 2010, 2025 and 2050 as assessed by National Commission on Integrated Water Resources Development (NCIWRD-1999) constituted by Ministry of Water Resources, is given below:

Sl.No.	Total Water Requirement for Different Uses (in BCM)			
	Uses	Year 2010	Year 2025	Year 2050
1.	Irrigation	557	611	807
2.	Domestic	43	62	111
3.	Industries	37	67	81
4.	Power (Energy)	19	33	70
5.	Others	54	70	111
	Total	**710**	**843**	**1180**

It is estimated by CWC in 2009 that about 450 BCM of surface water and as estimated by CGWB, that about 243 BCM of water is being utilised for various purposes in India. Thus the estimate of water demands of 710 BCM by NCIWRD in the year 2010 is quite matching with the current total utilisation of 693 BCM. Although, the water demand in 2050 in high demand scenario (1180 BCM) is approximately matching with the average water availability of the country (1121 BCM), the basin wise water availability has wide variations.

With large multipurpose water resources development projects like DVC, Hirakud, etc. initiated by Dr. Ambedkar, India has had an illustrious history in dam building. There are more than 5100 large dams in the country besides tens of thousands of medium and minor dams. Systematic development of available water

resources was taken up with the beginning of Plan era and in the process of planned development of water resources since independence, live storage in the country has been built up from 15.6 BCM at the time of independence to about 253 BCM in 2010. The multi-purpose large dams have made a significant contribution towards meeting water demand of various sectors in the country, realising the vision of Dr B. R. Ambedkar.

Some of the important large multipurpose projects taken up after independence are Tungabhadra, Nagarjunasagar, Sri Sailam, Subarnarekha, Ukai, Gandhisagar, Hasdeo, Jaikwadi,Ghatprabha, Rana Pratap Sagar, Parambikulam Aliyar, Matatila, Kangsabati, Sardar Sarovar, Tehri, Indira Sagar, Bansagar and Rajghat etc. Despite greater rainfall variability than many other places, per capita water storage is much lower in India as compared to various countries. As per FAO, India with per capita storage of about 252 m^3 ranks much lower than Russia (6103), Australia (4733), Brazil (3145), USA (1964), Turkey (1739), Spain (1410), Mexico (1245), China (1111), and South Africa (753).

The reassessment of live storage capacity of completed, under construction and under consideration projects was carried out by CWC in 2010. As per this assessment, live storage capacity of completed, under construction and under consideration projects were 253 BCM, 51 BCM and 104 BCM respectively totalling to 408 BCM. Out of this, as per estimate of Working Group on Major and Medium Irrigation for XI Plan, a capacity of about 53 BCM is likely to be lost to sedimentation by 2050, leaving a net storage of only 355 BCM at hand.

For harnessing of 690 BCM of utilizable surface water, it is estimated that approximate live storage capacity of about 450 BCM will be required. Thus, new storage projects with storage capacity of about 95 BCM (i.e. 450 BCM-355 BCM) are required to be identified and completed by 2050.

An idea of pace of storage creation is obtained from storage capacity of completed projects as per assessment of 2004 and 2010. The live storage created during this period is (253-225) i.e., 28 BCM during a period of 6 years. Thus, annual rate of storage creation is of the order

of 4.7 BCM. The pace of live storage creation required is (450+53-253)/40 i.e., about 6.2 BCM per year. Thus, present rate of storage creation is on lower side. Further, it will become more difficult to identify new storage potential in future due to various constraints such as difficult project locations, R&R and environmental issues, increased land compensation etc.

The National Water Policy, 2012 recommends that the anticipated increase in variability in availability of water because of climate change should be dealt with by increasing water storage in its various forms, namely, soil moisture, ponds, ground water, small and large reservoirs and their combination and that States should be incentivized to increase water storage capacity, which inter-alia should include revival of traditional water harvesting structures and water bodies (sub-para 4.2 under Chapter 4 titled 'Adaptation to climate change'). The National Water Policy, 2012 further recommends that all water resources projects, including hydro power projects, should be planned to the extent feasible as multi-purpose projects with provision of storage to derive maximum benefit from available topology and water resources (sub-para 9.7 under Chapter 9 titled 'Project Planning and Implementation').

Water storage in its various forms can increase water security, agricultural productivity and adaptive capacity. However, a key component of water storage is Rainfall Variability, which can be a major constraint to agricultural productivity and economic growth. Therefore, where rainfall variability is higher, higher water storage capacity is required, which needs to be further enhanced in order to deal with climatic variations.

With spatial and temporal variability in availability of surface water resources, it is difficult to fulfil the needs of the country without storing the monsoon waters in appropriately-sized storages for use in leaner months and even in drier years with carry-over provisions in the live capacity. Less live storage capacities in the country vis-a-vis the countries having similar hydro-meteorological conditions, reduces the resilience of the system towards hydro-meteorological extreme events such as floods and droughts. The inadequate resilience, due to lesser surface

storage capacity, is the main reason that compels the over-extraction of groundwater in the deprived regions and most of the times from very deep aquifers.

For creation of storage capacity, we need suitable sites (appropriate topography, geology, hydrology, construction material etc) which are limited and thus, we cannot build unlimited storages for technical reasons. Our requirement can hardly be met even after creation of storages at all possible sites. Therefore, we have to utilise the available sites for creation of storages to the fullest extent by construction of large, medium or small reservoirs, whatever is possible, otherwise we will not be able to utilise our surface water resources potential, depriving the country of the resultant benefits. Role of reservoirs in ensuring the water security, flood and energy security of India can be visualised from the following paragraphs:

Agricultural Production: There is direct relationship between food production and assured irrigation. If we concentrate over the States in India which have outperformed in the food production like Punjab, Haryana, Gujarat, Uttar Pradesh, Madhya Pradesh, Maharashtra, West Bengal, it is apparent that the large and medium water resources storage projects have played a key role. Such remarkable achievements have been possible due to the fact that large areas of these States are being covered under assured irrigation. The greatest inexplicable paradox of this country's water resources scenario has been the coexistence of droughts and floods and the beauty of large projects is that they have the capability to handle both the situations simultaneously and thus ironing out the erratic climatic behaviour to a large extent.

It is often contended by the social activists that the improvement in irrigation facilities and the resultant boom in food production is largely due to the minor irrigation and groundwater irrigation schemes. There is no point in denying the fact that the minor irrigation as well as groundwater irrigation facilities are equally important in promoting food production, but importance of major projects cannot be ignored. Also, the water and power needed for groundwater extraction are contributed by the major projects themselves to a large extent. Irrigation requirement of about 807 BCM in the year 2050 can not

be met without creation of additional storages in the country.

Domestic and Industrial Water Supply: The drinking water supply for most of the cities and towns in the country are dependent on storages and diversions for the purpose. Some examples of meeting domestic and industrial water requirements through storages are as follows:

- Delhi, the capital of India, which is situated on the banks of river Yamuna, gets only a fraction of its needs from river Yamuna. The balance needs are met with releases from Bhakhra, and Ramganga dams and now also from the Tehri dam. Besides, this allocation for drinking water supply to Delhi has also been provided in upcoming Renuka and Kishau Dam projects in Yamuna Basin for meeting its future needs.
- Sardar Sarovar dam has greatly helped in eliminating chronic drinking water shortage problems in North Gujarat. The project has provided drinking water to 137 towns and about 2000 villages already, including Ahmedabad city.
- The entire water supply of Mumbai is dependent on a series of dams like Vaitarna, Upper Vaitarna, Tansa and Bhatsa. For easing the acute scarcity of water supply in Chennai city, the States of Andhra Pradesh, Maharashtra, and Karnataka have agreed to provide part of their allocated share of Krishna water (to the extent of 15 TMC) which is also provided from Srisailam reservoir through Telugu-Ganga project.
- Water supply to cities like Pune, Hyderabad, Bengaluru, Warangal, and Ajmer all depend upon the water supply from dams.
- The cities of Chandigarh, Patiala, and Ropar, apart from numerous other towns and villages in Punjab, Haryana, and Rajasthan are getting their water supply from the canals fed by Bhakra-Beas system, comprising of many dams.
- For catering the needs of Bokaro Steel Plant, a dam namely Tenughat in the Damodar river basin was constructed.
- For Vishakhapatnam Steel Plant, the water is to be supplied from Yeluru reservoir.

- As abundant and assured cooling water is made available from Ukai reservoir to a large thermal power station having an installed capacity of 850 commissioned at Ukai since 1975. Other huge industries like Essar Gujarat, Reliance Petrochemicals, KRIBHCO, ONGC, NTPC etc are direct beneficiaries from Ukai-Kakrapar project.
- Gosunda dam near Udaipur meets the water demands of Udaipur city, along with industrial demands of Udaipur and Chittorgarh cities.

The above list gives some of the examples and is not exhaustive. About 200 BCM of water will be required by the year 2050 to meet domestic and industrial needs. This requires creation of more storages in future.

Hydropower: The hydropower generated from the large projects like Bhakra-Nangal, Hirakud, Tehri, Idukki, Ukai, Srisailam, Gandhisagar, Rana Pratapsagar, Jawaharsagar, and Rihand etc have not only provided cheap power but also assured power to meet the peaking power demand. The availability of assured water has immensely improved the economy of the areas under their command. In fact, hydropower being durable, non-polluting, and extremely cheap, its viability as an effective mode of producing energy increases even further. Apart from hydropower generation, the dams provide assured water for many thermal power plants in the country.

Today (2015-16), share of hydro energy in the total energy generation is only 15%. The share of hydropower in hydro-thermal mix has constantly gone down from over 50% after third plan to mere 16%. To meet the peak requirements of the future, grid stability and quality power, harnessing of hydropower at a much greater pace is required. Apart from multipurpose schemes, accelerated development of single purpose hydropower schemes is also required.

Table-1: Plan-wise Position of Irrigation Potential Created and Utilized (MHa)

Plan		Potential created					Potential Utilized				
		Major & Medium	Minor			Total	Major & Medium	Minor			Total
			S.W	G.W	Total			S.W	G.W	Total	
Upto 1951 (Pre-Plan)	Cumulative	9.70	6.40	6.50	12.90	22.60	9.70	6.40	6.50	12.90	22.60
I Plan	During	2.50	0.03	1.13	1.16	3.66	1.28	0.03	1.13	1.16	2.44
(1951-1956)	Cumulative	12.20	6.43	7.63	14.06	26.26	10.98	6.43	7.63	14.06	25.04
II Plan	During	2.13	0.02	0.67	0.69	2.82	2.07	0.02	0.67	0.69	2.76
(1956-1961)	Cumulative	14.33	6.45	8.30	14.75	29.08	13.05	6.45	8.30	14.75	27.80
III Plan	During	2.24	0.03	2.22	2.25	4.49	2.12	3.03	2.22	2.25	4.37
(1961-1966)	Cumulative	16.57	6.48	10.52	17.00	33.57	15.17	6.48	10.52	17.00	32.17
Annul Plans	During	1.53	0.02	1.98	2.00	3.53	1.58	0.02	1.98	2.00	3.58
(1966-1969)	Cumulative	18.10	6.50	12.50	19.00	37.10	16.75	6.50	12.50	19.00	35.75
IV Plan	During	2.60	0.50	4.00	4.50	7.10	1.64	0.50	4.00	4.50	6.14
(1969-1974)	Cumulative	20.70	7.00	16.50	23.50	44.20	18.39	7.00	16.50	23.50	41.89
V Plan	During	4.02	0.50	3.30	3.80	7.82	2.70	0.50	3.30	3.80	6.50
(1974-1978)	Cumulative	24.72	7.50	19.80	27.30	52.02	21.09	7.50	19.80	27.30	48.39
Annual Plans	During	1.89	0.50	2.20	2.70	4.59	1.48	0.50	2.20	2.70	4.18
(1978-1980)	Cumulative	26.61	8.00	22.00	30.00	56.61	22.57	8.00	22.00	30.00	52.57
VI Plan	During	1.09	1.70	5.82	7.52	8.61	0.93	1.01	4.24	5.25	6.18
(1980-1985)	Cumulative	27.70	9.70	27.82	37.52	65.22	23.50	9.01	26.24	35.25	58.75
VII Plan	During	2.22	1.29	7.80	9.09	11.31	1.90	0.96	6.91	7.87	9.77
(1985-1990)	Cumulative	29.92	10.90	35.62	46.52	76.44	25.40	9.97	33.15	43.12	68.52
Annual Plans	During	0.82	0.47	3.27	3.74	4.56	0.85	0.32	3.10	3.42	4.27

(1990-1992)	Cumulative	30.74	11.46	38.89	50.35	81.09	26.25	10.29	36.25	46.54	72.79
VIII Plan	During	2.21	1.05	1.91	2.96	5.17	2.13	0.78	1.45	2.23	4.36
(1992-1997)	Cumulative	32.95	12.51	40.80	53.31	86.26	28.38	11.07	37.7	48.77	77.15
IX Plan	During	4.10	1.09	2.50	3.59	7.69	2.57	0.37	0.85	1.22	3.79
(1997-2002)	Cumulative	37.05	13.60	43.30	56.90	93.95	31.01	11.44	38.55	49.99	81.00
X Plan	During	5.30	0.71	2.81	3.52	8.82	3.41	0.56	2.26	2.82	6.23
(2002-2007)	Cumulative	42.35	14.31	46.11	60.42	102.77	34.42	12.00	40.81	52.81	87.23
XI Plan*	During	6.34	NA	NA	5.45	11.79	1.27	N .A	N.A	1.43	2.7
(2007-2012)											
	Cumulative	48.69	N.A	N.A	65.56	114.56	35.69	N.A	N.A	54.24	89.93

Source: Planning Commission / P & P Dte./WRIS, CWC

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71. Developing Bengal's Water Resources Governors on Irrigation Projects in Hand, December 11, 1945 (p. 3, col 4-5).

72. Damodar Valley Menace of Soil Erosion by S.C. Bose, December 23, 1945 (p. 12, col. 3-5).

73. Kosi Dam to Eclipse Boulder Dam, January 23, 1946 (p. 2 col. 7).

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74. The Damodar and her Flood, by a Reader, February 5, 1946 (p. 281, col 2-4).

"It is wrong to think water in excessive quantity is an evil. Water can never be so excessive as to be an evil. Man suffers more from lack of water than from excess of it... Water being the wealth of the people and its distribution being uncertain, the correct approach is not to be complain against nature but to conserve water... to dam rivers at various points to conserve water permanently in reservoirs."

Dr. B.R. Ambedkar's speech at Cuttack on Nov.8, 1945.

"As I have said, the Damodar project must be a multipurpose project. We intend that it should not only deal with the problem caused by flood, it should also provide for irrigation, electricity and navigation.

Dr. B.R.Ambedkar's speech delivered at first Calcutta Conference on Damodar Valley project, January 3, 1945.

"The Commission (CWINC) will act as a central fact finding, planning and coordinating organization.... The Commission will be a strong technical organization designed to conduct, where necessary, surveys and investigation with a view to secure planned utilization of the water resources of the country as a whole and, in consultation with the Provincial and State Governments throughout the country, to coordinate and press forward schemes for conservation, control and regulation of water and waterways."

Resolution to constitute the Central Waterways Irrigation and Navigation Commission piloted by Dr. B.R.Ambedkar, and adopted on April 4, 1945.

Central Water Commission,
Sewa Bhawan, R.K.Puram,
New Delhi – 110066.