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MASTER PLANS KRISHNA GODAVARI BASINS



**GOVERNMENT OF MAHARASHTRA
IRRIGATION AND POWER DEPARTMENT**



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**REPORT OF THE COMMITTEE OF ENGINEERS
FOR THE STUDY OF MASTER PLANS FOR THE
KRISHNA AND THE GODAVARI BASINS IN
MAHARASHTRA STATE**

**REPORT OF THE COMMITTEE OF ENGINEERS FOR THE STUDY
OF MASTER PLANS FOR THE KRISHNA AND THE GODAVARI
BASINS IN MAHARASHTRA STATE**

1.0. *Appointment of the Committee.*—The Government of Maharashtra appointed a Committee at the State level to study broadly the Master Plans of the Krishna and the Godavari Basins in Maharashtra under Government, Irrigation and Power Department, Resolution No. ISW. 1067-KG, dated 18th October 1967 (copy enclosed as Annexure I-A).

The Committee consisted of—

- | | | | |
|---|-------|----------------------|----|
| (1) Shri V. B. Manerikar,
Chief Engineer
(Designs and Research)
and Joint Secretary | | .. Convenor-Member. | 10 |
| (2) Shri M. L. Champhekar,
Retired Chief Engineer | | .. Member. | |
| (3) Shri G. N. Pandit,
Retired Chief Engineer | | .. Member. | |
| (4) Shri D. A. Gadkary,
Retired Chief Engineer | | .. Member. | |
| (5) Shri V. M. Dandekar,
Director,
Gokhale Institute of
Politics and Economics,
Poona | | .. Member. | 20 |
| (6) Shri E. C. Saldanha,
Chief Engineer
(Water Resources)
and Joint Secretary | | .. Member-Secretary. | |

The Committee was first appointed for a period of six months. However, as preparation of the draft Godavari Master Plan for presenting it to the members took considerable time, the tenure of the committee was further extended upto 31st March 1969 (Government letter at Annexure I-B) Shri V. M. Dandekar, one of the members, attended only the first meeting. Thereafter, he was out of India for some time, and on his return resigned from the membership, as he had given up the post of Director of the Gokhale Institute of Politics and Economics in Poona. No one was appointed in his place as the study was nearing completion.

2.0. *Terms of reference.*

2.1. Specific terms of reference had not been formulated for this Committee in the above Government Resolution. During their first meeting, the members discussed this point and set down the following terms of reference for their work :—

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“The study should be confined broadly to the projects proposed to be included in the Master Plans of the Krishna and the Godavari basin within Maharashtra State, to achieve optimum utilisation of surface water resources available within these basins.”

2.2. The Master Plan study was confined generally to the use of flow available at 75 per cent dependability except in case of some of the projects which were already in operation or under construction where less dependable flows had been planned to be used.

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2.3. For projects in operation or under construction or cleared by the Planning Commission the details are the same as existing or as cleared by the Planning Commission.

For future schemes, the details are related to the best information available at the time. On the Krishna river, except in the case of a very few minor, medium and lift schemes, the schemes have been investigated and their feasibility established by necessary detailed field surveys. On the Godavari river, however, the details in some cases are based on preliminary reports, and studies of the technical and economical feasibility based on detailed field surveys, either in hand or yet to be made. Some of the future projects, on the Godavari in particular, would thus need modification or substitution.

3.0. *Meetings and Discussions.*

3.1. In all, four meetings were held to discuss and finalise the Krishna and the Godavari Master Plans of the State. These four meetings were held at Bombay on the following dates :—

1. 1st Meeting—9th February 1968.
2. 2nd Meeting—6th December 1968.
3. 3rd Meeting—27th February 1969.
4. 4th Meeting—26th March 1969.

3.2. The draft Master Plans were first prepared by the Superintending Engineer, Irrigation Projects and Water Resources Investigation Circle, Poona. These were scrutinised and modified where necessary by the Central Designs Organisation. These drafts were sent to the members in advance of each meeting for their perusal and suggestions. The suggestions of the members were discussed during the meetings, and the Master Plan modified on the basis of the decisions arrived at during these discussions. 10

3.3. The Krishna and the Godavari Master Plans finally approved are attached as Annexure II and Annexure III to this report.

4.0. *Availability of water in the two basins.*

4.1. As already stated above, the study with regard to availability was confined to assessment of 75 per cent dependable flow upto individual project sites as well as up to the State border. In both the Krishna and Godavari basins, the new Projects would provide sizeable percentages of additional return flows, while only 10 per cent of the diversion from the new projects have been assumed, on a conservative basis, as available for utilization, and of this only a part has been planned for use within Maharashtra itself in the Master Plan, the rest being assumed to flow past the Maharashtra border to the downstream States. 20

4.2. In Krishna basin, the average run-offs in uninterrupted or ungauged catchments were calculated by applying Inglis' Ghat or non-ghat catchment formula to the weighted average rainfalls of the catchments. The weighted average rainfall was computed from average isohyetal map for the basin 30

drawn from several years' data and approved by I.M.D., Poona. The average run-offs so calculated were multiplied by dependability factors worked out on the basis of data on existing projects in the vicinity to find out 75 per cent dependable yields.

4.3. For Godavari basin, the 75 per cent dependable yield was determined on the basis of run-off series worked out for the period 1914-1962. The weighted rainfalls were worked out by the method of Thiessen's Polygon, and Strange's Co-efficients with suitable catchment classifications applied to these weighted rainfalls of individual years to arrive at the run off series for each individual project as well as for the entire catchment upto the State border.

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4.4. The flow resources at 75 per cent dependability from the catchment areas within the State in the Krishna and the Godavari basins estimated on the above basis are as under—

		(All figures in T.M.C.)
A. Krishna Basin—		
(i) Bhima Sub-basin	.. ..	364
(ii) Krishna Sub-basin	.. ..	622
		<hr/>
	Total ..	986
	say	1000 T.M.C.
		<hr/>
B. Godavari Basin—		
(i) Main Godavari sub-basin (including Manjra) or Godavari Part I.		442
(ii) Pranhita sub-basin (including the Penganga, the Wardha and the Wainaganga) or Godavari Part II.		794
(iii) Indravati sub-basin or Godavari Part III	..	100
		<hr/>
	Total ..	1,336
	say	1340 T.M.C.
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5.0. Planned use of Water Resources.

5.1. Krishna Basin.

5.1.1. *Use from flow water.*—The details of projects, utilisation, benefits etc. in the Krishna basin are given in Annexure II Statements 2 and 3. An abstract of flow availability and use planned on flow in the Krishna basin is given in Statement I and is reproduced in brief below in Table 1. An abstract of utilisations on irrigation projects and westerly diversion projects is also given in Annexure II.

TABLE 1

(All figures in T.M.C.)

Sub-basin	75 per cent dependable flow	Use by projects in operation		Use by projects cleared and under construction		Use by other planned projects		Total	Water flowing down to the lower State	Remarks
		Gross		Gross		Gross		Gross		
		Net		Net		Net		Net		
1	2	3	4	5	6	7	8			
Bhima	.. 364	E 85	E 134	E 79	E 298					
		<u>74</u>	<u>110</u>	<u>67</u>	<u>251</u>					
		W 45	W ..	W ..	W 45					
		<u>42.6</u>			<u>426</u>					
		T 130	T 134	T 79	T 343	21				
		<u>116.6</u>	<u>110</u>	<u>67</u>	<u>293</u>					
Krishna	.. 622	E 27	E 89	E 154	E 270					
		<u>23</u>	<u>78</u>	<u>138</u>	<u>239</u>					
		W 75	W ..	W 141	W 216					
		<u>68</u>		<u>129</u>	<u>197</u>					
		T 102	T 89	T 295	T 486	136				
		<u>91</u>	<u>78</u>	<u>267</u>	<u>436</u>					
Total	.. 986	E 112	E 223	E 233	E 568					
		<u>97</u>	<u>188</u>	<u>205</u>	<u>490</u>					
		W 120	W ..	W 141	W 261					
		<u>110.6</u>		<u>129</u>	<u>239</u>					
		T 232	T 223	T 374	T 829	157				
		<u>207.6</u>	<u>188</u>	<u>334</u>	<u>729</u>					

Key.—E—Irrigation in basin.

W—Westward diversion.

T—Total.

Note.—The utilisations indicated above do not include the future probable requirements of industrial and domestic water supply which is expected to be of the order of 70 to 80 T.M.C.

5.1.2. *Use of regeneration Water.*—The total use indicated as 829 T.M.C. is from flow water only. Over and above this, the Master Plan provides for use of regeneration water to the extent of 33 T. M. C. which is the minimum considered would be utilisable on a conservative basis (See Table 2). Thus the total planned use of water under various projects in Maharashtra

in Krishna basin is $829+33=862$ T.M.C. The minimum regeneration that would be available for utilisation in the Krishna basin in Maharashtra, the use thereof planned, and the balance that will flow down to the lower State are summarised below in Table 2.

TABLE 2

(All figures in T.M.C.)

Sub-Basin	Total regeneration flow	Regeneration flow planned for use	Regeneration flow going down to lower State	Remarks
1	2	3	4	5
Bhima Sub-basin	32.3	29.0	3.3	
Krishna Sub-basin	20.3	3.5	16.8	
Total	52.6	32.5	20.1	

Abstract of flow plus regeneration use in the Krishna basin in Maharashtra State is given in Statement 1, Annexure II to this report.

5.2. Godavari Basin.

5.2.1. *Use from flow water.*—The details of projects, utilisations and benefits in the Godavari basin are given in Statements 2 and 3 of Annexure III. An abstract of flow availability and the use planned on the flow in the Godavari basin is given below in Table 3. 10

TABLE 3

(All figures in T.M.C.)

Sub-basin	75 per cent. dependable flow	Use by projects in operation	Use by projects cleared and under construction	Use by other planned projects	Total of eblx 3 to 5	Water flowing down to lower States	Remarks
		Gross	Gross	Gross			
1	2	Net	Net	Net	Net	7	8
Godavari Part I ..	442	96	151	142	389	53	
		81	121	116	318		
Godavari Part II ..	794	58	36	506	600	194	
		36	29	402	467		
Godavari Part III ..	100	.....	.....	50	50	50	
				13	13		
Total	1,336	154	187	698	1039	297	
		117	150	531	798		

Note.—The utilisations indicated above do not include the future probable requirements of Industrial and Domestic water supply, which is expected to be of the order of 100 to 110 T.M.C.

5.2.2. *Use of regeneration water.*—The total use of water in the Godavari basin indicated in para. 5.2.1 above as 1039 T.M.C. is from flow water only. Over and above this, the Master Plan provides for use of regeneration water to the extent of 58 T.M.C. Thus the total use of water planned under various projects in Maharashtra in the Godavari basin is 1039+58=1097 T.M.C. of water in the Godavari Basin too, as in the Krishna, the new projects would provide sizeable percentages of additional return flow, while only 10 per cent of the diversions for the new projects have been assumed on a conservative basis, as available for utilisation and of this, only a part has been planned for use within Maharashtra itself in the Master Plan, the rest being assumed to flow past the Maharashtra border to the downstream States. The minimum regeneration that would be available for utilisation in the Godavari basin in Maharashtra as estimated, the use planned, and the balance likely to flow down to the lower States are summarised below in Table 4.

TABLE 4

(All figures in T.M.C.)

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Sub-basin	Total regeneration flow	Regeneration flow planned for use	Regeneration flow going down	Remarks
1	2	3	4	5
Godavari Sub-basin	32	21	11	
Pranahita Sub-basin	43	38	5	
Indravati Sub-basin	....	....	....
Total	75	59	16	

Abstract of flow plus regeneration use in the Godavari basin in Maharashtra State is given in Statement-1, Annexure III to this report.

6.0. *Some important suggestions.*

6.1. *Krishna Basin.*—(1) Though the Ratnagiri district of the Konkan region receives heavy rainfall during the monsoon months, the food crops, such as rice and ragi, grown by the farmers are grossly inadequate to sustain the population of the district. The area under post-monsoon second crops is negligible. Large quantities of foodgrains are, therefore, required to be imported into the district every year from long distances over rail and road.

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Five westward diversion schemes have therefore been proposed to enable assured supplies of water to the monsoon crops and to new crops to be grown during the rabi and hot weather seasons. The storages for these schemes are located above the ghats and it is also proposed to take advantage of the natural drop available to generate power. However, since the demand for irrigation in the monsoon period is expected to be small it is proposed to generate power with a low load factor of up to 15 per cent in order that water unutilised on irrigation may be very small.

(2) The Sholapur district is one of the worst famine and scarcity affected districts in Maharashtra. For this reason, in addition to the flow schemes proposed in the Master Plan the Committee recommends Lift Irrigation Schemes on Bhima near Begampur and on Sina, about one mile upstream of its confluence with Bhima. The lifts involved are moderate. 10

(3) In the Krishna valley there is plenty of water potential but the land potential in the basin for flow irrigation schemes is limited. In some cases the flow canals are likely to be uneconomical as they would involve high storages and long canals with low commanded areas, per mile. Therefore, it is proposed that water may be lifted upto a maximum of 200 to 250 feet at selected points and put into canals. The lifting of water should be done by Government and the farmers would get water from the canals only. 20

One of the important lift schemes accordingly incorporated in the Master Plan was from Koyna at Warunji to Krishna at Khodshi, and further on to the Borkhal canal, to be extended into Yerala valley, a chronically famine stricken area with plenty of land potential but without adequate water resources. Storages on Urmodi, Tarali etc. should be fully tapped to give additional storage backing to this lift scheme. With the incorporation of these suggestions, an additional 17 T.M.C. of water in Krishna basin could be put to use in an area where irrigation is badly needed. This suggestion has therefore been incorporated in the Master Plan. 30

6.2. *Godavari basin.*—(1) The additional water planned to be diverted from the Godavari ex-Nandur Madhmeshwar-weir should be completely used to extend irrigation to new areas in the chronically famine stricken belt in the Gangapur and Vaijapur Talukas, instead of intensifying irrigation in the commands of existing Godavari Left Bank Canal and Godavari Right Bank Canal. For ensuring near the tails of these canals water for perennials etc., the problem should be treated as one of proper distribution of the quantum of water already being diverted over the entire command. The scarcity areas on the left Bank of the Godavari between tail of existing Godavari Left Bank Canal and Yerbhadra nallah may be covered by a flow canal from Nandur Madhmeshwar pond. As the re-modelling of the old existing Godavari Left Bank Canal to take a larger discharge would involve difficult and costly measures, a new Left Bank Canal with about 8 feet higher bed level is proposed. This new Left Bank Canal should have an average gradient of 1 in 5000 and be lined to avoid wastage of scarce storage water and spread the benefits to as large a scarcity area as possible. About 3,00,000 acres additional gross area can be thus commanded by this canal, of which about 1,50,000 acres can be irrigated. Jayakwadi project type crop pattern duties and deltas may be adopted. 10

(2) On the Right Bank of the Godavari, scarcity area around Shevgaon in Ahmednagar (excluding areas covered by Mula Right Bank Canal, and other medium schemes) should be provided with irrigation by lifting water from the off-shore of Paithan lake. A suitable site for such lift is indicated near Tajunapur where water may be lifted to a height of 80 feet static or 100 feet total, and put into a flow canal to command 50,000 acres and irrigate about 25,000 acres. These two schemes will provide adequate irrigation facilities to the scarcity areas on the left and right Bank of the river Godavari between Nandur Madhmeshwar and Paithan. 20

There are large areas on both banks of the Wainganga river with good soils. Provision of irrigation facilities would result in substantial additional 30

yields of foodgrains and other crops. The Committee noted that storage sites have been proposed on this river at Gosikhurd and elsewhere in the river basin, but thorough investigations for foundations have yet to be made. The Committee recommends that detailed investigations should be made and expert advice obtained for the foundations if necessary. Successful implementation of irrigation schemes in the Wainganga basin will bring large benefits to the State.

(4) While planning for projects in Vidarbha area, it may be borne in mind that eastern areas are rich in minerals such as iron, manganese, coal, lime etc. Great care should be taken to identify commercially exploitable deposits and avoid projects involving submergence or irrigation of such areas. 10

(5) In addition to power generation at Watra Budruk (on the Pranhita) and at Bhopal-Patnam (on the Indravati), it appears that if a low dam is constructed at Inchampalli (with FRL and MWL not exceeding RL 320.00) considerable additional power generation from the regulated releases becomes possible. This low dam will not involve large submergence nor is it likely to affect the two upper power projects. With the additional power generation possible with a low dam at Inchampalli, the three combined schemes will be more attractive than the two schemes of Watra-Budruk and Bhopal Patnam. This should be kept in view while formulating proposals for the Godavari Water diversion to the Krishna. Accordingly Maharashtra would also benefit by power from Inchampalli weir. 20

6.3. *General recommendations.*—(1) Efforts should be made to spread out irrigation benefits to as large an area as possible and the delta should be adjusted to reasonable figures for future projects having regard to the requirements of high yielding varieties of crops.

(2) Large-scale submergence will be involved in the implementation of all the schemes contemplated. Considerable resistance against such submergence is likely to develop from the people affected. This should not be

allowed to develop and mar the prospects and benefits accruing to the whole State. As a general policy, the people affected by submergence, should be given lands within the commanded areas of the projects. If necessary, land should be acquired as for public use to rehabilitate these people.

Signatures :—

(Sd.) (V. B. MANERIKAR)

(Sd.) (M. L. CHAMPHEKAR)

(Sd.) (G. N. PANDIT)

(Sd.) (D. A. GADKARY)

(Sd.) (E. C. SALDANHA)

Dated 31st March 1969.

ANNEXURE I-A

*Study of Master Plans of Krishna and
Godavari Basins.*

*Appointment of a Committee of
Engineers for the —*

GOVERNMENT OF MAHARASHTRA

IRRIGATION AND POWER DEPARTMENT

Resolution No. ISW 1067-KG

Sachivalaya, Bombay-32-BR, 18th October 1967

Resolution.—The Government of Maharashtra is pleased to set up 10
committee at the State level to study broadly the Master Plans of the Krishna
Godavari basins in Maharashtra.

2. The Committee shall consist of :

- (1) Shri V. B. Manerikar, Convenor-Member.
Chief Engineer, Irrigation Projects (I)
and Joint Secretary.
- (2) Shri M. L. Champhekar, .. Member.
Retired Chief Engineer.
- (3) Shri G. N. Pandit, Member.
Retired Chief Engineer.
- (4) Shri D. A. Gadkary, Member.
Retired Chief Engineer.
- (5) Shri V. M. Dandekar, Member.
Director, Gokhale Institute of Politics
and Economics, Poona.
- (6) Shri E. C. Saldanha, Member-Secretary.
Superintending Engineer, Central
Designs Organisation.

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3. The Committee shall meet as and when necessary. The non-official members of the Committee should be allowed to draw Travelling Allowance and Daily Allowance at the rates admissible in accordance with the provisions contained in Appendix XLII-A of Bombay Civil Services Rules, Volume II—Section I—Rules 1(1)(b)-I and with the normal rules thereunder.

4. The expenditure involved may be debited to the head “ 50 P.W.C.—Estt. (Ordy.) Non-Plan and the expenditure incurred on Travelling Allowance and Daily Allowance during the current year 1967-68 may be met from the current year’s sanctioned grants under the head mentioned above.

5. The tenure of the non-official members of the Committee as now 10 constituted should be for a period of six months.

6. This Government Resolution issues with the concurrence of the Finance Department *vide* its un-official reference No. 1498/XVIII, dated the 29th September 1967.

By order and in the name of the Governor of Maharashtra,

M. D. DESHMUKH,

Deputy Secretary to Government.

ANNEXURE I-B

*Study of Master Plans of Krishna
and Godavari Basins.*

*Appointment of a Committee of
Engineers for the —
Tenure of the —*

GOVERNMENT OF MAHARASHTRA

IRRIGATION AND POWER DEPARTMENT

Resolution No. ISW. 1067-KG

Sachivalaya, Bombay-32/BR-dated the 28th September 1968
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Resolution.—The Government of Maharashtra is pleased to direct that the tenure of the Committee of Engineers appointed to study the Master plans of Krishna and Godavari basins which was originally constituted for a period of six months *vide* Government Resolution, Irrigation and Power No. ISW. 1067-KG, dated the 18th October 1967, is hereby further extended upto end of March 1969.

2. These orders issue with the concurrence of the Finance Department *vide* that Department un-official reference No. 15103/1540/68-VIII-A, dated the 7th September 1968.

By order and in the name of the Governor of Maharashtra, 20

V. B. MULYE,

Under Secretary to the Government of Maharashtra,
Irrigation and Power Department.

ANNEXURE II—ABSTRACT

*Abstract of water requirements of Maharashtra State in the Krishna Basin
in accordance with the Master Plan.*

Serial No.	Type of Projects	Gross utilisation in T.M. C.				Benefits		Remarks
		Projects existing and cleared	Projects pending with C.W. and P.C. and Planning Commission	Other Planned projects	Total of Cols. 3 to 5	Irrigation in lakh acres	Power generation (at 60 per cent L. F.) in M. W.	
1	2	3	4	5	6	7	8	9
1	Irrigation Projects within the Krishna.	335	67 +16*	150	568	29.45	..	
2	Westerly diversion projects.	120	84 +33*	24	261	1.89	1277	
	Total ..	455	200	174	829	31.34	1277	

*Additional quantities proposed to be utilised, at Koyna of which intent has been communicated to Government of India.

Note.—The utilisations indicated above do not include the future probable requirements of industrial and domestic water supply which are expected to be of the order of 70 to 80 T.M.C. as also the utilisation of 32.5 T.M.C. from regenerated flow.

ANNEXURE II—(STATEMENT 1)

KRISHNA BASIN OF MAHARASHTRA STATE

Statement showing the planned use of 75 per cent dependable flow of Krishna basin by Maharashtra State at various points of diversion and benefits therefrom.

Sub-Basin	Catchment area in square miles	75 per cent dependable flow in T. M. C.	Gross utilisation in T. M. C.				Net utilisation in T. M. C.				Benefits		Water from Maharashtra contribution flowing below border T. M. C.
			Projects cleared	Projects pending with Planning Commission	Other Planned Projects	Total of Cols. 4 to 6	Projects cleared	Projects pending with Planning Commission	Other planned Projects	Total of Cols. 8 to 10	Irrigation in lakh acres	Power generation at 60 per cent L. F. in K. W.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Part I—Krishna Sub-basin including (K.1) Upper Krishna, (K.2) Middle Krishna and (K.3) Ghatprabha.</i>													
(K.1) Upper Krishna ..	6805	564.3	188.7*	97.9*	160.0*	446.6*	168.4*	90.4*	142.0*	400.8*	13.31**	9,18,600	117.7
(K.2) Middle Krishna ..	522	(3.5) 2.6	75.0 0.7	57.1	56.3 1.3	188.4 2.0	67.5 0.5	51.9	53.3 0.9	172.7 1.4	1.45 0.23	.....	0.6
(K.3) Ghatprabha ..	628	55.1	0.6	32.2*	4.4	37.2*	0.3	29.2*	3.6	33.1	0.86**	1,50,000	18.1
				27.2		27.2		24.2		24.2	0.44		
Total of Part I ..	7955	622.0 (3.5)	190.0*	130.1*	165.7*	485.8*	169.2*	119.6*	146.5*	435.3*	14.40**	10,68,600	136.4
			75.0	84.3	56.3	215.6	67.5	76.1	53.3	196.9	1.89		
<i>Part II—Bhima Sub-basin including (K.5) Upper Bhima and (K.6) Lower Bhima.</i>													
(K.5) Upper Bhima ..	17500	356.6 (29.0)	261.9*	20.9	56.1	338.9*	224.3*	20.0	46.1	290.4*	16.65	2,08,600	17.7
(K.6) Middle Bhima ..	1230	7.4	45.0 2.7	0.3	1.2	45.0 4.2	42.6 2.0	0.2	0.9	42.6 3.1	0.29	.....	3.2
	18,730	364.0 (29.0)	264.6*	21.2	57.3	343.1*	226.3*	20.2	47.0	293.5*	16.94	2,08,600	20.9
			45.0			45.0	42.6			42.6			
Total of I & II ..	26,685	986.0 (32.5)	454.6*	151.3*	222.8*	828.7*	395.5*	139.8*	193.5*	728.8*	31.34**	12,77,200	157.3
			120.0	84.3	56.3	260.6	110.1	176.1	53.3	239.5	1.89		

Key.—*Numerator represents total use including westward diversion.

Denominator represents westward diversion.

**Numerator represents total irrigation including Konkan.

Denominator represents irrigation in Konkan on Krishna waters.
Bracketed figures indicate regeneration flow planned for use.

ANNEXURE II (STATEMENT 2)

Statement showing the planned use of 75 per cent dependable flow of Krishna basin by Maharashtra State at various points of diversion and benefits therefrom.

(Bracketed figures indicate regeneration flow planned for use)

Serial No.	Name of the Project or diversion point	Catchment area in square miles	75 per cent yield in T. M. C.	Gross use in T. M. C.		Net use in T. M. C.		Irrigation in thousand acres	Power Generation at (60 per cent L.F.) K.W.	Remarks
				Projects Cleared	Projects Planned	Projects Cleared	Projects Planned			
1	2	3	4	5	6	7	8	9	10	11
<i>Part I—Krishna sub-basin in Maharashtra</i>										
<i>K. 1, K. 2 and K. 3.</i>										
<i>I—Upper Krishna (K. 1.)</i>										
<i>(a) Krishna river upto Khodshi Weir (existing)</i>										
1	Krishna Project	350	36.3 (1.0)	35.9	....	32.8	....	159.2	....	Project under construction.
2	Urmodi Project	42	6.4	....	6.2	....	5.6	20.0	....	Report under preparation.
3	Tarali Project	51	7.6	....	6.7	....	6.2	19.0	....	Report in advance stage of readiness.
4	3 Medium Projects (One Hydrel)	27	1.8	....	1.1	....	0.9	6.9	3,800	Hydrel report ready (See Statement 3)
5	Minor Irrigation Works	312	7.2	2.5	4.7	2.3	3.3	75.0	....	Existing and future, under planning.
6	Krishna canal ex-Khodshi Weir	540	8.6 (2.5)	5.7	(2.5)	5.7	(2.5)	36.3	....	In operation.
	Total, I (a)	1,322	67.9 (3.5)	44.1	18.7 (2.5)	40.8	16.0 (2.5)	315.4	3,800	
<i>(b) Koyna river upto Warunji Weir (proposed)</i>										
7	Koyna Hydrel with reservation of 16 T. M. C. storage for lift scheme.	344	123.8	75.3	48.5	67.5	48.5	....	5,40,000	In operation.
				75.0	32.5	67.5W	32.5W			
8	Wan Project	88	12.1	....	12.1	....	11.0	42.0	....	Report in advance stage of readiness.
9	Minor Irrigation Lift Schemes	33	5.3	4.0	1.3	4.0	1.0	20.0	....	Existing and future, under planning.

10	Koyna-Krishna Lift with 16 T. M. C. support of Koyna Storage.	275	35.7	.....	5.6	.....	5.0	84.0	.....	Report in advanced stage of readiness.
	Total, I (b) ..	740	176.9	79.3	67.5	71.5	65.5	146.5	5,40,000	
				75.0	32.5	67.5	32.5			
<i>(c) Right bank tributaries upto State border.</i>										
11	Warna Project	202	57.4	47.6	9.8	40.5	9.8	229.0	.....	Under Construction ; part pending with Planning Commission.
12	Radhanagri Project	33	13.5	11.0	.....	10.0	.....	50.0	4,800	In operation.
13	Kadvi Multi-purpose	59	15.6	.....	15.6	.....	12.6	33.0	30,000	Report ready.
				..	9.1		7.6	18.0		
14	Kasari Multi-purpose	96	34.4	.....	34.4	.....	31.9	56.0	1,40,000	Pending with Planning Commission.
					34.4		31.9	56.0		
15	Kumbhi Multi-purpose	49	17.5	.....	17.5	.....	15.5	41.0	60,000	Report ready.
					10.5		9.5	23.0		
16	Phonda Multi-purpose	10	4.2	.....	4.2	.....	3.7	11.0	20,000	Report under preparation.
					4.2		3.7	11.0		
7	Vedganga Multi-purpose	80	27.7	.....	27.7	.....	24.0	49.0	1,20,000	Pending with Planning Commission.
					22.7		20.0	37.0		
18	Kaljewadi Lift	38	12.9	.....	8.0	.....	7.0	21.0	.....	Under planning.
19	Tulshi Project	14	3.5	35	.....	2.9	.....	8.9	.....	Under construction.
20	Dudhganga Project (Maharashtra portion).	76	36.0	.....	26.0	.....	24.7	98.1	.....	Pending with Planning Commission.
21	8 Medium with reservation for future works not shown in the master plan.	551	19.6	.....	19.6	.....	15.6	145.0	.....	See Statement 3.
22	Minor Irrigation Works in the balance C. A.	2,347	70.7	1.2	6.1	0.8	4.0	75.0	.....	Existing, under construction and under planning.
	Total, I (c) ..	3,565	313.0	63.3	168.9	54.2	148.8	817.0	3,74,800	
					80.9		72.7	145.0		

Note.—Bracketed figures indicate utilisable regeneration flow.

ANNEXURE II (STATEMENT 2)—*contd.*

Serial No.	Name of the Project or diversion point	C. A. in sq. miles (free)	75 per cent yield in T. M. C.	Gross use in T. M. C.		Net use in T. M. C.		Irrigation in thousand acres	Power Generation at (60 per cent L. F.) in K. W.	Remarks
				Cleared	Planned	Cleared	Planned			
1	2	3	4	5	6	7	8	9	10	11
<i>(d) Yerala River (Left Bank Tributary of Krishna) Upto its confluence.</i>										
23	3 Medium Schemes	311	2.0	0.5	1.0	0.4	0.9	17.6	....	One in operation and rest under planning.
24	Minor Irrigation Works in the balance C. A.	867	4.5	1.5	1.8	1.1	1.2	35.0	....	Existing, under construction and proposed, under planning.
	Total of I(d)	1,174	6.5	2.0	2.8	1.5	2.1	52.6	....
	Grand Total of K.1 (a to d) ..	6,805	564.3	188.7	257.9	168.4	232.4	1,331.0	9,18,600	
			(3.5)	75.0	113.4	67.5	105.2	145.0		
<i>II—Middle Krishna, Agrani river upto State border (K.2).</i>										
25	One Medium Scheme	65	0.3	....	0.3	....	0.2	3.4	....	Report in advance stage of readiness.
26	Minor Irrigation Works in rest of C. A.	457	2.3	0.7	1.0	0.5	0.7	19.6	....	Existing, under construction and proposed, under planning.
	Total of II (K.2)	522	2.6	0.7	1.3	0.5	0.9	23.0	....
<i>III—Ghatprabha upto State border (K.3).</i>										
27	Hiranyakeshi Multi-purpose ..	94	32.2	....	32.2	....	29.2	58.5	1,50,000	Pending with Planning Commission.
					27.2		24.2	44.0		
28	2 Medium Schemes	30	9.1	....	3.4	....	2.9	12.5	....	See Statement 3.

29	Minor irrigation works in the balance C. A.	504	13.8	0.6	1.0	0.3	0.7	15.0	....	Existing under construction and proposed, under planning.
	Total of K. 3 ..	628	55.1	0.6	36.6	0.3	32.8	86.0	1,50,000	
					27.2		24.2	44.0		
	Grand Total of Part I (I, II & III)	7,955	622.0	190.0	295.8	169.2	266.1	1,440.0	10,64,800	
			(3.5)	75.0	140.6	67.5	129.4	189.0		
	Total flow use ..			485.6		435.3				
	Regeneration use ..			(3.5)		(3.5)				
	Westward diversion ..			215.6		196.9				
	Eastern use ..			270.0		238.4				

PART II—BHIMA SUB-BASIN IN MAHARASHTRA (K-5, K-6.)

IV—K-5 Upper Bhima.

(a) Bhima River upto Ujjani storage.

30	Tata Hydrel Works	166	48.8	45.0	—	42.6	....	....	1,90,600	In operation.
				45.0		42.6				
31	Mutha System Khadakwasla ..	196	38.4	23.5	9.6	21.4	8.4	128.0	....	Under construction.
32	Kukdi Project	527	42.4	20.0	(1.1)	18.0	(1.1)	298.1	14,000	Half portion cleared for execution, rest pending with Planning Commission.
33	Ghod Dam Project	874	8.9	10.4	(2.0)	8.4	(2.0)	62.4	....	In operation.
34	Chaskaman Project	118	12.5	....	(10.0)	....	(9.0)	72.0	....	Report ready.
35	Kundali Project	18	4.6	....	(2.5)	....	(2.0)	15.0	....	Report under preparation.
36	3 Medium Schemes	159	2.1	2.1	....	2.0	....	11.5	....	See Statement 3.
37	Minor Irrigation Works	330	3.2	2.6	0.6	1.8	10.4	32.0	....	Existing under construction and pro- posed, under planning.
38	Bhima Irrigation Project (Pawna and Ujjani Storage).	3,348	62.5	90.7	....	70.5	....	296.0	....	Under Construction.
		5,736	223.4	194.3	29.1	164.7	26.8	915.0	2,04,600	
				45.0	Nil	42.6	Nil	Nil		
					(15.6)		(15.6)			

N.B.—When schemes shown at S. No. 31 to 35 come into operation 15.6 T.M.C. regeneration flow will be available, this will make good the reduction in flow at Ujjani by 13.6 T.M.C. as well as 2.0 T.M.C. at Ghod Dam due to taking up schemes with bracketed figures.

ANNEXURE II—(STATEMENT 2)—*contd.*

Serial No.	Name of the Project or diversion point	C. A. in sq. miles (free)	75 per cent yield in T. M. C.	Gross use in T. M. C.		Net use in T. M. C.		Irrigation in thousand acres	Power Generation at (60 per cent L. F.) in K. W.	Remarks
				Cleared	Planned	Cleared	Planned			
1	2	3	4	5	6	7	8	9	10	11
<i>(b) Nira river upto Vir Storage.</i>										
39	One medium Scheme	15	0.5	....	0.5	....	0.4	5.0	....	Under preparation.
40	Nira System ex-Vir	663	65.2	49.0	16.2	46.4	14.1	321.0	4,000	Major portion in operation, rest under preparation.
Total IV (b)		678	65.7	49.0	16.7	46.4	14.5	326.0	4,000	
<i>(c) Bhima river below Ujjani and Vir Storage upto Begampur Lift Scheme.</i>										
41	Barhanpur Project	383	1.9	....	1.5	....	1.2	14.0	....	Report ready.
42	Mhaswad Project	480	2.7	2.2	....	1.6	....	10.1	....	In Operation.
43	5 Medium Schemes	498	3.6	1.8	1.8	1.3	0.9	24.9	....	See Statement 3.
44	Minor Irrigation Works	966	6.8	1.5	4.3	1.1	3.0	68.0	....	Existing and future, under planning.
45	Begampur List Scheme	2,200	14.4 (10.1)	....	5.3 (10.1)	....	4.0 (10.1)	60.0	....	Under planning.
Total IV (c)		4,527	29.4 (10.1)	5.5	12.9 (10.1)	4.0	9.1 (10.17)	177.0		
<i>IV (d) Sina river upto Kolegaon Storage.</i>										
46	Sina at Nimgaon	525	2.2	....	1.8	....	1.6	13.5	....	Report ready.
47	8 Medium Schemes	627	3.8	3.0	0.8	2.6	0.6	38.7	....	See Statement 3.
48	Minor Irrigation Works	300	1.8	1.0	0.8	0.8	0.6	18.0	....	Existing and future, under planning.
49	Sina at Kolegaon	560	3.3	....	4.3	....	3.7	32.0	....	Report under preparation.
Total IV (d)		2,012	11.7	4.0	7.7	3.4	6.5	102.2	....

(e) Sina river below Kolegaon upto Sina Lift Scheme.

50	Ekrak Tank Project	..	159	2.2	2.0	....	1.0	....	5.2	....	In operation.
51	5 Medium Schemes	..	710	5.6	2.2	2.6	1.7	2.2	40.7	....	See Statement 3.
52	Minor Irrigation Works	..	650	3.9	1.5	3.0	1.1	2.0	45.0	....	Existing, under construction and proposed, under planning.
53	Sina Lift Scheme	..	1,069	6.0 (3.0)	....	3.0 (3.0)	....	2.5	20.0	....	Under planning.
Total IV(e)		..	2,588	17.7 (3.0)	5.7	8.6 (3.0)	3.8	6.7	110.9	....

(f) Rest of Upper Bhima upto State Border.

54	3 Medium Schemes	..	145	1.3	0.3	1.0	0.2	0.8	9.0	....	See Statement 3.
55	Sholapur City Water Supply Scheme	..	....	1.6	1.6	....	1.6	....	....	....	Under construction.
56	Minor Irrigation in the balance catchment	..	1,814	5.8	1.5	1.0	1.2	0.7	25.0	....	Existing, under construction and proposed, under planning.
Total IV (f)		..	1,969	18.7	3.4	2.0	3.0	1.5	34.0	....
Grand Total IV (a to f) K. 5.		..	17,500	356.6 (29.0)	261.9 45.0	78.0 Nil	224.3 42.6	65.1 Nil	1,665.1	2,08,600	

V—Lower Bhima (K. 6.) in Maharashtra.

57	7 Medium Schemes	..	353	3.7	2.5	1.2	1.9	0.8	24.3	....	See Statement 3.
58	Minor Irrigation in the catchment upto Border.	..	877	3.7	0.2	0.3	0.1	0.3	5.0	....	Existing and future, under planning.
		..	1,230	7.4	2.7	1.5	2.0	1.1	29.3	....
Grand Total of Bhima Basin IV & V. (K. 5 and K. 6)		..	18,730	364.0 (29.0)	264.6 45.0	79.5 Nil	226.3 42.6	66.2 Nil	1,694.4	2,08,600	

ANNEXURE II—(STATEMENT 3)

DETAILS OF MEDIUM PROJECTS IN KRISHNA BASIN

Cleared and planned Projects in the various reaches in Maharashtra State

Serial No.	Name of the Project.	Catchment areas in square miles	75% dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres.	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
<i>I(a) Krishna River upto Khodshi weir.</i>							
4/1	Kas Hydel Project ..	3	0.8	0.1	....	....	Project report ready.
4/2	Mand Project (Jalge-wadi)	14	0.9	0.9	0.8	5.7	Under planning.
4/3	Hivre Project ..	10	0.1	0.1	0.1	1.2	Project report ready.
Total I(a)		27	1.8	1.1	0.9	6.9	
<i>I(c) Right Bank tributaries</i>							
21/1	Gothna Lift Scheme	8	3.2	0.4	0.3	1.0	Under planning.
21/2	Morna Project ..	33	1.6	1.6	1.4	4.3	Do.
21/3	Chikutra Project ..	45	3.8	0.7	0.5	7.5	Do.
21/4	Takave Project ..	6	0.2	0.2	0.1	2.1	Do.
21/5	Male Project ..	3	0.1	0.1	0.1	1.2	Do.
21/6	Kandalgaon Project	4	0.1	0.1	0.1	1.8	Do.
21/7	Phaye Project ..	7	1.4	1.4	1.2	7.2	Do.
21/8	Karanjwane Project..	3	0.1	0.1	0.1	1.5	Do.
	Other medium projects ..	442	9.1	15.0	11.8	118.4	Under investigation.
Total		551	19.6	19.6	15.6	145.0	
<i>I(d) Yerala River upto confluence</i>							
23/1	Nehr Tank ..	60	0.5	0.5	0.4	5.1	In operation.
23/2	Yeralwadi Froject ..	236	1.4	0.9	0.8	11.2	Under planning.
23/3	Vadgaon Nani Project	15	0.1	0.1	0.1	1.3	Do.
Total I (d)		311	2.0	1.5	1.3	17.6	
<i>II-Middle Krishna</i>							
25/1	Agrani at Shindewadi	65	0.3	0.3	0.2	3.4	Under planning.
<i>III-Ghatprabha upto State border</i>							
28/1	Gudavale Lift Scheme	24	8.8	3.1	2.7	8.4	Under planning.
28/2	Kitwad Project ..	6	0.3	0.3	0.2	3.9	Do.
		30	9.1	3.4	2.9	12.3	

ANNEXURE II—(STATEMENT 3)—*contd.*

Serial No.	Name of the Project	C.A. in sq. miles (free)	75% dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres	Remarks.
				Gross	Net		
1	2	3	4	5	6	7	8
<i>IV-(a) K. 5 Upper Bhima</i>							
36/1	Visapur Tank ..	159	1.4	1.4	1.3	5.2	In operation
36/2	Puspawati Bandhara.		0.5	0.5	0.5	4.3	Do.
36/3	Tail Tank on L.B.C.		0.2	0.2	0.2	2.0	Report ready.
	Total ..	159	2.1	2.1	2.0	11.5	
<i>(b) Nira upto Vir</i>							
39/1	Vadgaon (Mand) ..	14	0.5	0.5	0.4	5.0	Under planning.
<i>(c) Bhima River below Ujjani and Vir upto Begampur</i>							
43/1	Ashti Project ..	92	1.0	1.0	0.5	4.7	In operation.
43/2	Budhial Project ..	141	1.0	0.9	0.8	10.5	Do.
43/3	Nazre Project ..	154	0.5	0.5	0.4	4.3	Pending with planning commission.
434	Shegaon Project ..	69	0.4	0.4	0.3	3.2	Under planning.
43/5	Nimbavade ..	42	0.3	0.3	0.2	2.2	Report ready.
	Total of (c) ..	498	3.6	3.6	2.2	24.9	
<i>(d) Sina River upto Kolegaon</i>							
47/1	Mangi Project ..	116	1.2	1.2	0.9	9.7	In operation.
47/2	Mehekari Project ..	131	0.7	0.7	0.6	10.0	Do.
47/3	Kada Project ..	63	0.5	0.5	0.4	7.0	Do.
47/4	Talwar Project ..	34	0.2	0.2	0.1	1.5	Do.
47/5	Kambli Project ..	50	0.3	0.3	0.2	2.0	Do.
47/6	Rooty Project ..	58	0.3	0.3	0.2	2.0	Do.
	Total of (d) ..	452	3.2	3.2	2.4	32.2	
47/7	Kadi Project ..	38	0.3	0.3	0.2	1.5	Under construction.
47/8	Khairi Project ..	137	0.6	0.6	0.5	5.0	Under planning
	Total of IV(d) ..	627	4.1	4.1	3.1	38.7	
<i>(e) Sina River below Kolegaon upto Sina Lift Scheme</i>							
51/1	Khasapur Project ..	214	1.3	1.3	1.0	10.4	In operation.
51/2	Chandani Project ..	234	1.5	0.9	0.7	9.2	Do.
		448	2.8	2.2	1.7	19.6	

ANNEXURE II—(STATEMENT 3)—*contd.*

Serial No.	Name of the Project	C.A. in sq. miles (free)	75% dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres.	Remarks.
				Gross	Net		
1	2	3	4	5	6	7	8
51/3	Ulup Project	17	0.2	0.2	0.2	1.5	Report ready.
51/4	Hingni Pangaon	155	1.6	1.6	1.4	12.0	Pending with planning Commission.
51/6	Hatiz Hingani	90	1.0	0.9	0.8	7.2	Report ready.
		262	2.8	2.7	2.4	20.7	
	Total	710	5.6	4.9	4.1	40.3	
(f) <i>Rest of Upper Bhima upto State border.</i>							
54/1	Padwalkarwadi	22	0.3	0.3	0.2	1.5	Under construction.
54/2	Halchinchchi Project.	17	0.2	0.2	0.2	1.5	Report ready
54/3	Chikalgi Project	106	0.7	0.6	0.5	6.0	Under planning.
	Total	145	1.2	1.1	0.9	9.0	
<i>V—Lower Bhima</i>							
57/1	Harni Project	74	0.6	0.6	0.5	7.3	In operation.
57/2	Kurnoor Project	126	1.9	1.9	1.4	9.0	Do.
	Total	200	2.5	2.5	1.9	16.3	
57/3	Khandala Project	28	0.3	0.3	0.2	2.0	Pending with planning Commission.
57/4	Shiralwadi	10	0.1	0.1	0.1	1.0	Under planning.
57/5	Jakapur Project	47	0.4	0.3	0.2	2.0	Do.
57/6	Kolsur Project	33	0.3	0.3	0.2	2.0	Do.
57/7	Yenegur Project	35	0.3	0.3	0.2	2.0	Do.
	Total	353	3.9	3.8	2.8	25.3	

Annexure III (ABSTRACT)

Abstract of Water Requirement of Maharashtra State in the Godavari basin in accordance with the Master Plan

Serial No.	Type of Project	Gross Utilisation in T.M.C.				Benefits		Remarks
		Projects existing and cleared	Projects pending with C.W. and P.C. and Planning Commission	Other Planned projects	Total of columns 3, 4, 5	Irrigation in lakh acres	Power generation (at 60% L.F.) in MW.	
1	2	3	4	5	6	7	8	9
1	Main Godavari including Pravara, Purna, Manjra upto State border. (Part I.)	247	21	120†	388	26.51	89	
2	Godavari Sub-basin including Penganga, Wardha, Wainganga-Pranhita upto confluence. (Part II.).	95	118	388	601†	46.46	71	†Allows for 75 T. M. C. flowing down to Maharashtra.
3	Indravati river up to confluence with Godavari. (Part III.).	Nil	Nil	50	50†	1.41	175	†Allows for 9 T. M. C. flowing down to Maharashtra.
Total ...		342	139	558	1,039	74.38	335	

Note.—The utilisation indicated above do not include the future probable requirements of Industrial and Domestic water supply which is expected to be of the order of 100 to 110 T. M. C. and the utilisation of 60 T.M.C. regenerated flow.

Annexure III (Statement I)

Godavari basin of Maharashtra State—Statement showing the planned use of 75 per cent dependable flow of Godavari basin by Maharashtra State at various points of diversion and benefits therefrom.

Sub-Basin	Catchment area in square miles	75 per cent dependable flow in T.M.C.	Gross utilisation in T. M. C.				Net utilisation in T. M. C.				Benefits		Water from Maharashtra contribution flowing below border T.M.C.
			Projects cleared	Projects pending with Planning Commission	Other Planned Projects	Total of of columns 4 to 6	Projects cleared	Projects pending with Planning Commission	Other Planned Projects	Total of Columns 8 to 10	Irrigation in lakh acres	Power generation (at 60 per cent L. F.) in K.W.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Part I—Main Godavari including Pravara, Purna and Manjra upto State Border.</i>													
G-2 & G-1 upto Paithan.	8,400	196.0 (10.7)	167.4	1.2	30.1	198.7(i) 196.0	137.0	1.0	25.0	163.0	12.61	74,000	Nil
G-3 Purna and G-1 upto Istapuri.	11,442	142.4 (10.3)	66.9	3.1	52.3	122.3	56.2	2.5	45.9	104.6	9.35	15,000	20.1
G-4 Manjra ..	5,946	74.7 (0.7)	11.0	17.1	28.6	56.7	8.0	12.8	21.7	42.5	3.50	...	18.0
G-1+G5 Upto State border.	1,972	28.4	1.6	..	9.3	10.9	1.2	...	7.3	8.5	1.05	...	17.5
Total of Part I ..	27,760	441.5 (21.7)	246.9	21.4	120.3	388.6(i) 385.9	202.4	16.3	99.9	318.6	26.51	89,000	55.6

Annexure III (Statement I)—contd.

Sub-Basin	Catchment area in square miles	75 per cent dependable flow in T.M.C.	Gross utilisation in T. M. C.				Net utilisation in T.M.C.				Benefits		Water from Maharashtra contribution flowing below border T.M.C.
			Projects cleared	Projects pending with Planning Commission	Other Planned Projects	Total of of columns 4 to 6	Projects cleared	Projects pending with Planning Commission	Other Planned Projects	Total of Columns 8 to 10	Irrigation in lakh acres	Power generation (at 60 per cent L. F.) in K.W.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Part-II—Godavari sub-basin including Penganga, Wardha, Wainganga, Pranhita upto confluence with Godavari</i>													
G-7. Penganga ..	8,627	162.0 (3.8)	9.8	46.5	93.0	149.3	7.7	39.4	77.5	124.6	10.56	12,000	12.7
G-8. Wardha ..	8,683	211.2 (3.0)	9.0	25.8	57.7	92.5	7.6	20.3	44.7	72.6	8.36	...	118.7
G-9. Wainganga, Pranhita upto Watra B.	11,181	410.81 (31.7)	75.5	45.7	233.4	354.6(ii) 279.7	49.6	40.8	176.9	267.3	27.04	58,700	131.1
G-9. Below watra B upto confluence.	410	10.5	0.2	..	3.4	3.6	0.1	...	2.4	2.5	0.50	...	6.9
Total of Part II ..	28,901	794.5 (38.5)	94.5	118.0	387.5	600.0(ii) 525.1	65.0	100.5	301.5	467.0	46.46	70,700	269.4

Sub-Basin	Catchment area in square miles	75 per cent dependable flow in T. M. C.	Gross utilisation in T.M.C.				Net utilisation in T.M.C.				Benefits		Water from Maharashtra contribution flowing below border T.M.C.
			Projects cleared	Projects pending with Planning Commission	Other Planned Projects	Total of columns 4 to 6	Projects cleared	Projects pending with Planning Commission	Other Planned Projects	Total of Columns 8 to 10	Irrigation in lakhs acres	Power generation (at 60 per cent L.F.) in K. W.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Part III—Godavari sub-basin Indravati river—G-11 in Maharashtra upto confluence with Godavari</i>													
G-11. Upto Bhopal-patnam.	1,755	80.8	....	....	49.0	$\frac{49.0(iii)}{39.7}$	....	....	12.2	12.2	1.33	1,75,400	41.1
G-11. Below Bhopal patnam upto confluence.	349	19.2	....	....	1.0	1.0	....	....	0.8	0.8	0.08	....	18.2
Total of Part III ..	2,105	100.0	....	....	50.0	$\frac{50.0(iii)}{40.7}$	....	....	13.0	13.0	1.41	1,75,400	59.3
Grand Total (I, II & III)	58,766	1,336.0 (60.4)	341.4	139.4	557.8	$\frac{1,038.6^*}{951.7}$	267.4	116.8	414.4	798.6	74.38	3,35,100	384.3

- Notes.— (i) 2.7 T.M.C. less dependable use is approved in Mula Project.
(ii) 74.9 T.M.C. flowing below Madhya Pradesh border is proposed to be utilised in the Projects marked.
(iii) 9.3 T. M. C. flowing below Madhya Pradesh border is proposed to be utilised at Kotri-Nimbura Hydel Project.
(iv) Bracketed figures indicate regeneration flow planned for use.

*Numerator represents total use including water flowing down from Madhya Pradesh, denominator use from Maharashtra Contribution only.

Annexure III (Statement 2)/Godavari

Statement showing the cleared and planned use of 75 per cent dependable flow of Godavari basin of Maharashtra State at various points of diversion and benefits therefrom. (Bracketted figures indicate regeneration flow planned for use.)

Serial No.	Name of the Project or diversion site	Catchment area in square miles	Contribution 75 per cent dependable flow in T.M.C.	Gross utilisation in T.M.C.		Net use in T.M.C.		Benefits		Remarks
				Projects cleared	Projects planned	Projects cleared	Projects planned	Irrigation in thousand acres	Power generation (at 60 per cent L.F.) in K.W.	
1	2	3	4	5	6	7	8	9	10	11
<i>Part I—Godavari Sub-basin including main Godavari (G1), Pravara (G2) Purna (G3), and Manjra (G4) upto State Border</i>										
<i>I. Godavari river upto Paithan reservoir (a) G2 Pravara river upto confluence with Godavari</i>										
1	Bhandardara Randha Hydel ..	47	14.5	....	....	....	....	....	60,000	(Existing storage) Report pending with Planning Commission.
2	Mahaladevi Project ..	91	7.2	....	7.2	....	6.4	50.0	2,000	Report in advance stage of readiness.
3	2 Medium Irrigation Works ..	127	2.5	1.5	1.0	1.3	0.9	16.9	....	See Statement 3.
4	Pravara Canals ex-Ozar ..	456	2.4 (0.6)	16.5	..	15.8	....	71.8	....	In operation.
	Total upto Ozar ..	721	26.6 (0.6)	18.0	8.2	17.1	7.3	138.7	62,000	
5	Mula Project at Baregaon Nandur.	878	25.4	28.1	....	25.4	....	162.0	....	Under construction.
6	Minor Irrigation Works ..	925	10.3	0.7	0.5	0.5	0.3	13.3	....	Existing and proposed, under planning
	Total of G2 upto confluence.	2,524	62.3 (0.6)	46.8	8.7	43.0	7.6	314.0	62,000	

Serial No.	Name of the Project or diversion site	Catchment area in square miles	Contribution 75 per cent flow in T.M.C.	Gross utilisation in T.M.C.		Net use in T.M.C.		Benefits		Remarks	
				Projects cleared	Projects planned	Projects cleared	Projects planned	Irrigation in thousand acres	Power generation (at 60 per cent L.F.) in K.W.		
1	2	3	4	5	6	7	8	9	10	11	
<i>(b) Rest of Catchment upto Paithan Dam</i>											
7	Upper Godavari Project ..	330	15.7	15.7	..	13.3	..	111.0	..	Under construction.	
8	Gangapur Project Stage I and II	138	8.0	8.0	..	7.4	..	44.0	..	In operation.	
9	Pimpalgaon Project Dukra ..	55	3.2	..	3.2	..	3.0	24.0	..	Project under planning.	
10	Godavari Canal ex-N.M. weir.	736	33.2 (2.2)	14.1	16.2	12.8	12.8	213.0	..	Half in operation and rest under planning.	
11	9 Medium Irrigation Works ..	623	8.0	1.5	3.2	1.2	2.6	35.0	..	See Statement 3.	
12	Minor Irrigation Works in the CA upto Paithan.	479	4.1	1.2	(2.9)	1.0	(2.1)	41.0	..	Existing and proposed, under planning.	
13	Shovgaon Lift Scheme from Paithan Reservoir.	..	..	..	(5.0)	..	(5.0)	25.0	..	Report under preparation.
14	Jayakwadi Project Stage I. (Paithan).	3,515	61.5 (7.9)	80.1	..	58.3	..	454.0	12,000	Under construction.	
Total I (b)		..	5,876	133.7 (10.1)	120.6	22.6	94.0	18.4	947.0	12,000	<i>Note.</i> —When schemes shown above come into operation 7.9 T.M.C. regeneration will be available.
Total of (a+b)		..	8,400	196.0 (10.7)	167.4	31.3	137.0	26.0	1,261.0	74,000	
II. Godavari below Paithan reservoir upto Ishtapuri Lift Scheme (terminal site on Main Godavari). (a) G.3 Purna Sub-basin (including Dudhna) upto confluence with Godavari.											
15	8 Medium irrigation Works ..	378	3.8	2.1	1.7	1.7	1.5	37.3	..	See Statement 3.	
16	Minor Irrigation Works u/s of Rajewadi Dam.	230	1.7	0.4	1.3	0.3	1.0	17.0	..	Existing and proposed, under planning.	
17	Lower Dudhna Project Rajewadi Site.	1,051	14.3	..	14.3	..	12.6	83.7	..	Report under preparation.	
Total upto Dudhna at Rajewadi.		1,659	19.8	2.5	17.3	2.0	15.1	138.0	..		

Annexure III (Statement 2) Godavari—contd.

Serial No.	Name of the Project or diversion site	Catchment area in square miles	Contribution 75 per cent flow in T.M.C.	Gross utilisation in T.M.C.		Net use in T.M.C.		Benefits		Remarks
				Projects cleared	Projects planned	Projects cleared	Projects planned	Irrigation in thousand acres	Power generation (at 60 per cent L.F.) in K.W.	
1	2	3	4	5	6	7	8	9	10	11
18	9 Medium Irrigation Works ..	382	3.7	1.6	2.1	1.3	1.7	34.2	..	See statement 3.
19	Minor Irrigation works u/s Sidheshwar Dam	230	3.8	0.8	3.0	0.6	2.5	38.8	..	Existing and proposed, under planning.
20	Purna Hydel Project (Yeldari)	2,218	35.3	5.0	..	..	..	..	15,000	In operation.
21	Purna Irrigation Project with Canal Lift Scheme.	170	2.7	30.0	3.0	28.3	3.0	172.0	..	Flow scheme in operation, lift scheme—under preparation.
Total upto Purna Sidheshwar.		3,000	45.5	37.4	8.1	30.2	7.2	245.0	15,000	
22	2 Medium Schemes ..	139	1.8	....	1.8	..	1.5	7.5	..	See statement 3.
23	Minor Irrigation Works below Sidheshwar Rajewadi upto confluence.	1,217	11.3	0.3	0.5	0.2	0.4	6.0	..	Existing and proposed, under planning.
		1,356	13.1	0.3	2.3	0.2	1.9	13.5	..	
Total in Purna sub-basin (G.3)		6,015	78.4	40.2	27.7	32.4	24.2	396.5	..	

Serial No.	Name of the Project or diversion site	Catchment area in square miles	Contribution 75 per cent flow in T.M.C.	Gross utilisation in T.M.C.		Net use in T.M.C.		Benefits		Remarks
				Projects cleared	Projects planned	Projects cleared	Projects planned	Irrigation in thousand acres	Power generation (at 60 per cent L.F.) in K.W.	
1	2	3	4	5	6	7	8	9	10	11
<i>II (b) Sindhphana river upto Manjalgaon Storage.</i>										
24	5 Medium Irrigation Works ..	438	3.4	1.2	2.2	1.0	2.0	32.8	..	See Statement 3.
25	Minor Irrigation Works u/s of Manjalgaon.	132	1.3	0.5	0.8	0.4	0.6	13.2	..	Existing, and proposed, under planning.
26	Jayakwadi Project Stage II (Manjalgaon).	930	18.0 (0.2)	18.0	..	16.0	..	231.0	..	Construction under planning.
Total upto Manjalgaon ..		1,500	22.7 (0.2)	19.7	3.0	17.4	2.6	277.0	..	
<i>(c) Rest of Catchment upto Istapuri Lift Scheme.</i>										
27	10 Medium Irrigation Works ..	609	6.9	2.2	4.7	1.8	3.8	58.0	..	See Statement 3.
28	Other Medium Projects	600	6.0	..	6.0	..	5.2	52.0	..	Under investigation.
29	Minor Irrigation Works ..	400	4.0	1.0	3.0	0.8	2.6	38.5	..	Existing, and proposed, under planning.
30	(a) Istapuri Lift Scheme ..	..	..	..	11.0	..	10.0	72.0	..	Under planning.
	(b) Manar Stage II ..	2,318	24.4 (10.1)	3.8	..	3.8	..	41.0	..	Under construction.
Total of II (c) ..		3,927	41.3 (10.1)	7.0	24.7	6.4	21.6	261.5	..	
Total of II (a + b + c) ..		11,442	142.4 (10.3)	66.9	55.4	56.2	48.4	935.0	15,000	

Annexure III (Statement 2) Godavari—contd.

Serial No.	Name of the Project or diversion site	Catchment area in square miles	Contribution 75 per cent dependable flow in T.M.C.	Gross utilisation in T.M.C.		Net use in T.M.C.		Benefits		Remarks
				Projects cleared	Projects planned	Projects cleared	Projects planned	Irrigation in thousand acres	Power Generation (at 60 per cent. L.F.) in K.W.	
1	2	3	4	5	6	7	8	9	10	11
<i>III.—Manjra Sub-basin upto State Border (G 4) (a) Upstream of Nizam-sagar.</i>										
31	5 Medium Irrigation Works ..	563	6.0	3.1	2.9	2.3	2.0	35.3	..	See Statement 3.
32	Manjra Project at Dhanegaon.	885	9.6	..	9.0	..	6.6	48.0	..	Pending with Planning Commission.
33	Manjra Lift Scheme ..	1,044	10.0 (0.7)	..	3.5	..	3.0	15.0	..	Under investigation.
34	Lower Thirna Project ..	519	7.0	..	7.0	..	5.5	40.0	..	Under preparation.
35	Minor Irrigation upto State Border.	1,033	12.1	2.0	6.0	1.5	4.0	61.7	..	Existing, under construction and proposed, under planning.
Total of III-(a)		4,044	44.7 (0.7)	5.1	28.4	3.8	21.1	200.0	..	
<i>(b) Rest of the Manjra Sub-basin below Nizam-sagar</i>										
36	7 Medium Irrigation Works ..	264	3.6	0.5	3.1	0.4	2.5	29.5	..	See Statement 3.
37	Lendi Irrigation Project ..	399	7.4	..	7.4	..	5.6	37.0	..	Pending with Planning Commission.
38	Upper Manar Project ..	331	3.4	..	3.4	..	2.5	22.0	..	Under investigation and subject to comment made in Govt. Resolution No. ISW 1069-KG, Dated the 20th January 1971.

Serial No.	Name of the Project or diversion site	Catchment area in square miles	Contribution 75 per cent flow in T.M.C.	Gross utilisation in T.M.C.		Net use in T.M.C.		Benefits		Remarks
				Projects cleared	Projects planned	Projects cleared	Projects planned	Irrigation in thousand acres	Power generation (at 60 per cent L.F.) in K.W.	
1	2	3	4	5	6	7	8	9	10	11
39	Manar Project Stage I (war want storage).	225	5.0	4.9	..	3.4	..	25.0	..	In operation.
40	Minor Irrigation Works	683	10.6	0.5	3.4	0.4	2.8	36.5	..	Existing, under construction and proposed, under planning.
		1,902	30.0	5.9	17.3	4.2	13.4	150.0	..	
	Total of III (a+b)	5,946	74.7 (0.7)	11.0	45.7	8.0	34.5	350.0	..	
IV.—Godavari river below Ishtapuri upto State Border.										
(a) Main Godavari G-1 portion										
41	4 Medium Irrigation Works	63	0.9	0.3	0.6	0.2	0.5	10.2	..	See Statement 3.
42	Other Medium Projects	350	5.0	..	5.0	..	4.0	50.0	..	Under investigation.
43	Minor Works in the C.A.	1,219	18.5	1.0	2.5	0.8	2.0	30.0	..	Existing, under construction and proposed, under planning.
	Total of G-1	1,632	24.4	1.3	8.1	1.0	6.5	90.0	..	
(b) G-5 Middle Godavari upto State Border										
44	One Medium Scheme	48	0.5	..	0.5	..	0.4	4.5	..	Under preparation.
45	Minor Irrigation works in the Rest of C.A.	292	3.5	0.3	0.7	0.2	0.4	10.2	..	Existing, under construction and proposed, under planning.
	Total of G-5	340	4.0	0.3	1.2	0.2	0.8	14.7	..	
	Total of IV (a+b)	1,972	28.4	1.6	9.3	1.2	7.3	105.0	..	

Annexure III (Statement 2) Godavari—contd.

Serial No.	Name of the Project or diversion site	Catchment area in square miles	Contribution 75 per cent. dependable flow in T.M.C.	Gross utilisation in T.M.C.		Net use in T.M.C.		Benefits		Remarks.
				Project cleared	Project planned	Project cleared	Project planned	Irrigation in thousand acres	Power generation (at 50 per cent.L.F.) in K.W.	
1	2	3	4	5	6	7	8	9	10	11
<i>Part II—Godavari Sub-basin including, Penganga G-7, Wardha G-8, Wainganga-Pranhita G-9 and Lower Godavari G-10 portion.</i>										
<i>V. G-7 Penganga river upto confluence with Wardha (Drainage area in Maharashtra is of the order of 8,627 Sq. miles)</i>										
<i>(a) Penganga river upto Chikhali Wardha Storage (terminal reservoir site)</i>										
46.	Upper Penganga Project (Isapur and Kayadhu),	2,378	44.1	..	39.5	..	34.3	257.5	..	Pending with Planning Commission.
47	Sahasrakund Hydel Project (Takli site),	970	19.6 (1.9)	..	6.1	..	4.5	25.0	12,000	Do.
48	Upper Pus Project	..	276	4.9	4.4	..	3.4	28.9	..	Under construction.
49	Lower Pus Project	..	210	4.6 (0.3)	..	4.6	..	3.6	20.0	Under investigation.
50	Ar Project at Chirkuta	..	371	5.5	..	4.4	..	3.6	43.0	Do.
51	Aran Project at Pimpri Barwat	..	201	3.2	..	3.2	..	2.5	30.0	Report ready.
52	Goki Project	..	213	2.4	..	2.2	..	1.7	20.0	Report under preparation.
53	20 Medium Irrigation Works	..	405	7.3	0.7	6.6	0.5	5.2	74.0	See statement 3.
54	Other Medium Project	..	300	5.0	..	5.0	..	4.0	50.0	Under investigation.

Serial No.	Name of the Project or diversion site	Catchment area in square miles	Contribution 75 per cent flow in T.M.C.	Gross utilisation in T.M.C.		Net in use T.M.C.		Benefits		Remarks	
				Projects cleared	Projects planned	Projects cleared	Projects planned	Irrigation in thousand acres	Power generation (at 60 per cent L.F.) in K.W.		
1	2	3	4	5	6	7	8	9	10	11	
55	Minor Irrigation Works	...	600	10.6	2.7	7.9	2.2	6.0	82.6	...	Existing, under construction and proposed, under planning.
56	Lower Penganga Project with 6 T.M.C. reservation for A. P. for L.B.C.	1,043	30.1 (1.6)	...	45.7	...	40.5	249.0	...	...	Report ready.
Total upto Chikhaj Wardha		6,967	137.3 (3.8)	7.8	125.1	6.1	105.9	880.0	12,000	...	...

(b) Penganga river below Chikhaj Wardha upto confluence with Wardha

57	Waghari Project	...	92	2.4	...	2.0	...	1.7	18.0	...	Report ready.
58	9 Medium Irrigation Works	...	288	3.4	1.2	2.1	1.1	1.6	24.0	...	See statement 3.
59	Other Medium Project	..	620	8.0	...	8.0	...	6.0	100.0	...	under investigation.
60	Minor Irrigation Works	...	660	11.9	0.8	2.2	0.5	1.7	34.0	...	Existing, under construction and proposed, under planning.
Total of V-(b)		...	1,660	24.7	2.0	14.4	1.6	11.0	176.0	12,000	...
Total of (a+b)		..	8,627	162.0 (3.8)	9.8	139.5	7.7	116.9	1,056.0	12,000	...

VI-G-8 Wardha river upto confluence with Wainganga (Drainage area in Maharashtra is of the order of 8654 Sq. miles).

61	Upper Wardha Project.	...	1,072	23.9	...	23.9	...	18.8	143.0	...	Pending with Planning Commission.
62	31 Medium Irrigation Works	..	954	18.5	2.3	15.3	1.9	12.4	173.0	...	See statement 3.
63	Kavitgaon Weir Scheme	...	1,027	10.90 (0.9)	...	2.4	...	2.1	36.0	...	Under investigation and subject to comment made in Govt. Resolution No. IS/1069-KG, Dated the 20th January 1971.

Under investigation and subject to comment made in Govt. Resolution No. IS/1069-KG, Dated the 20th January 1971.

Annexure III (Statement 2) Godavari—contd.

Serial No.	Name of the Project or Diversion site	Catchment area in square miles	Contribution 75% dependable flow in T.M.C.	Gross utilisation in T.M.C.		Net use in T.M.C.		Benefits		Remarks
				Project cleared	Project planned	Project cleared	Project planned	Irrigation in thousand acres	Power generation (at 60% L.F.) in K.W.	
1	2	3	4	5	6	7	8	9	10	11
64	Bembla Project	721	7.0	....	7.0	....	5.1	70.0	....	Report under preparation.
65	Pohna weir across, Wardhä	685	8.5 (1.8)	....	2.9	....	2.5	50.0	....	Under investigation and subject to comment made in Govt. Resolution No. ISW 1069-KG, Dated the 20th January 1971.
66	Dham River Project	143	2.4	....	2.4	....	2.0	24.0	....	Report ready.
67	Bor River Project	147	4.2	4.2	....	3.9	....	42.6	....	In operation.
68	Lower Wunna Project	512	10.1 (0.3)	....	10.1	....	7.6	67.0	....	Report under preparation.
69	Other Medium Projects.	610	12.0	....	12.0	....	9.0	110.0	....	Under investigation.
70	Minor Irrigation Works spread out in the C. A. upto confluence.	2,812	113.7	2.5	7.5	1.8	5.5	120.4	....	Existing, under construction and proposed under planning.
Total, G-8		8,683	211.2 (3.0)	9.0	83.5	7.6	65.0	836.0	....	Under planning.

Serial No.	Name of the Project or diversion site	Catchment area in square miles	Contribution 75 per cent flow in T.M.C.	Gross utilisation in T.M.C.		Net in use T.M.C.		Benefits		Remarks
				Projects cleared	Projects planned	Projects cleared	Projects planned	Irrigation in thousand acres	Power generation (at 60 per cent L.F.) in K.W.	
1	2	3	4	5	6	7	8	9	10	11
VII. Waingana, Pranhita River upto confluence with Godavari River [Drainage area in Maharashtra G. 9, (11410) sq. miles and (G 10) 318 sq. miles].										
(a) Waingana upto proposed Gosikhurd storage.										
71	*Eastern Bagh (jointly with M. P.).	47	2.2	.....	2.2	.....	1.7	24.0	.....	Under investigation.
72	*Bagh Project at Pujaritola with Kalisarar storage (jointly with M. P.).	201	9.1	7.9	3.1	6.7	2.6	84.0	.....	Under construction and Kalisarar Project under preparation.
73	*Dhapewada Diversion Schemes (with storages in M. P.)	542	22.0 (3.6)	.....	38.7	.....	36.4	140.0	.....	Under investigation.
74	*Bawanthari Project (jointly with M. P.)	220	5.3	.....	8.1	.....	6.9	62.0	.....	Under investigation.
75	Ramtek Tank	82	2.4	2.4	.....	1.5	.....	17.3	.....	In operation
76	*Pench Hydel Project (jointly with M. P.).	8	0.6 (2.6)	.....	3.6	.....	.....	.....	16,000	Pending with Planning Commission.
77	*Pench Irrigation Project	150	3.9	.....	41.0	.....	39.8	182.0	.....	Pending with Planning Commission.
78	*Kanhan Diversion Scheme (with storage in M. P.).	200	4.9 (1.0)	.....	14.9	.....	14.0	126.0	.....	Under investigation.
79	33 Medium Irrigation Works	665	14.7	4.6	10.1	3.7	7.8	791.0	.....	See Statement 3.
80	Other Medium Projects	125	5.0	.....	5.0	.....	3.0	48.0	.....	Under investigation.
81	Minor Irrigation Works	500	21.0	16.0	5.0	10.2	3.0	212.0	.....	Existing, under construction and proposed under planning.
82	Gosikhurd Project	1,541	80.2 (9.5)	.....	37.5	.....	28.5	150.0	.....	Report under preparation.
Total (a)		4,281	171.3 (16.7)	30.9	169.2	22.1	143.7	1224.3	16,000	

Annexure III (Statement 2) Godavari—contd.

Serial No.	Name of the Project or diversion site	Catchment area in square miles	Contribution 75% dependable flow in T.M.C.	Gross utilisation in T.M.C.		Net use in T.M.C.		Benefits		Remarks
				Project cleared	Project planned	Project cleared	Project planned	Irrigation thousand in acres	Power generation at 60% L.F. in K.W.	
1	2	3	4	5	6	7	8	9	10	11
VII. (b) Wainganga below Gosikhurd upto Watra Budruk (terminal Hydel site)										
83	Saskuran Project	62	2.7	..	2.7	..	2.2	31.0	..	Under planning.
84	Itiadh Project	272	11.0	11.0	..	10.0	..	71.5	..	Under construction.
85	Khobragadi Project	58	3.4	..	3.4	..	3.0	27.0	..	Under planning.
86	Tultulli Project	230	13.5	..	13.5	..	12.0	100.0	..	Under planning.
87	Sathi Project	139	4.7	..	4.7	..	4.0	39.0	..	Under planning.
88	Kathani Project	240	14.4	..	14.4	..	12.2	100.0	..	Do.
89	Pohar Project	55	2.7	..	2.7	..	2.0	30.0	..	Do.
90	Dina Project	75	2.7	2.7	..	2.5	..	30.5	..	Under construction.
91	Andhari Project	175	5.0	..	5.0	..	4.0	37.0	..	Under planning.
92	Human Nalla Project	383	8.3	..	8.3	..	6.6	60.0	..	Do.
93	Asolamendha Project	95	2.9	2.6	..	1.8	..	18.1	..	In operation.
94	17 Medium Irrigation Projects	374	12.6	4.4	8.2	3.4	6.7	126.2	..	See Statement 3.
95	Other Medium Projects	400	17.0	....	17.0	....	12.0	330.0	....	Under investigation.
96	Minor Irrigation Works	1,000	39.9	23.9	16.0	9.8	9.3	480.0	....	Existing and proposed
97	Pranhita Hydel at Watra Budruk jointly with Andhra Pradesh	3,342	98.7	....	14.0	....	....	....	42,700	Under investigation.
Total		6,900	239.5	44.6	109.9	27.5	74.0	1,480.3	42,700	
			(15.0)							

Serial No.	Name of the Project or diversion site	Catchment area in square miles	Contribution 75 per cent flow in T.M.C.	Gross utilisation in T.M.C.		Net use in T.M.C.		Benefits		Remarks
				Projects cleared	Projects planned	Projects cleared	Projects planned	Irrigation in thousand acres	Power generation (at 60 per cent L.F.) in K.W.	
1	2	3	4	5	6	7	8	9	10	11
Total up to Watra Budruk B(a+b)		11,181	410.8 (31.7)	75.5	279.1	49.6	217.7	2704.6	58,700	
<i>VII (c) Pranhita below Watra upto Godavari confluence</i>										
98	G. 9. Minor Irrigation and Lift Scheme.	314	8.0	0.2	2.8	0.1	2.0	42.0	....	Existing under construction and proposed, under planning.
99	G. 10 Minor Irrigation and lift Schemes.	96	2.5	....	0.6	....	0.4	8.0	....	Proposed.
		410	10.5	0.2	3.4	0.1	2.4	50.0	....
VIII. Part III—Godavari sub-basin Indravati G. 11 (Drainage area in Maharashtra is of the order of 2105 sq. miles.)										
<i>(a) Indravati river upto Bhopal Patnam proposed reservoir (in Maharashtra State only)</i>										
100	*Kotri-Nibra Hydel Works	52	1.7	....	11.0	....	....	....	1,04,600	Under planning.
101	Bandia Hydel Works	495	19.4	....	3.5	....	....	....	3,300	Do.
102	Other Medium Projects	100	3.0	....	3.0	....	2.5	30.0	....	Under investigation.
103	Minor Irrigation Works	123	3.8	....	3.8	....	3.0	50.0	....	Proposed.
104	Bhopal patnam Multipurpose	986	52.9	....	27.7	....	6.7	53.0	67,500	Under planning.
Total of VIII(a)		1,756	80.8	....	49.0	....	12.2	133.0	1,75,400	
<i>(b) Below Bhopal Patnam upto confluence with Godavari</i>										
105	Minor Irrigation Works	349	19.2	....	1.0	....	0.8	8.0	....	Proposed.
Total of VII (a + b)		2,105	100.0	....	50.0	....	13.0	141.0	1,75,400	

Note : Projects marked thus *allow M.P.'s contribution flowing down to Maharashtra.

Annexure III (Statement 3)

Details of Medium Projects in Godavari basin cleared and planned in the various reaches in Maharashtra State

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T. M. C.	Utilisation in T.M. C.		Irrigation in thousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
I. (a) Pravara Sub-basin G.-2—							
3/1	Adala at Deothan	68	1.5	1.5	1.3	8.9	Under construction.
3/2	Mahalungi at Bhojapur	59	1.0	1.0	0.9	8.0	Pending with Planning Commission.
		127	2.5	2.5	2.2	16.9	
I. (b) Rest Godavari upto Paithan—							
11/1	Kadwa river works	182	3.0	0.7	0.7	2.3	In operation.
11/2	Dheku Project	100	0.7	0.7	0.4	6.7	Do.
11/3	Kolhi Project	16	0.1	0.1	0.1	1.2	Do.
		298	3.8	1.5	1.2	10.2	
11/4	Dharaswadi Project	23	0.2	0.2	0.1	1.3	Pending with Planning Commission.
11/5	Alandi Project.	59	1.9	1.1	1.0	8.0	Report ready
11/6	Ambodi Project	55	0.6	0.4	0.3	2.8	Under planning.

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
11/7	Dhor river Project	61	0.4	0.4	0.3	3.8	Under Planning.
11/8	Erdhanadi Project	55	0.6	0.6	0.5	5.0	Do.
11/9	Nani Nadi Project	72	0.5	0.5	0.4	4.0	Do.
		302	4.0	3.0	2.5	23.5	
	Total of I (b)	623	8.0	4.7	3.8	35.0	
<i>II.(a) (i) Dudhna Sub-basin upto Rejewadi</i>							
15/1	Sukhna Project	110	1.0	1.0	0.8	11.5	In operation.
15/2	Upper Dudhna Project	95	1.1	1.1	0.9	8.4	Do.
		205	2.1	2.1	1.7	19.9	
15/3	Kalyan Girja Project	44	0.5	0.5	0.4	4.0	Pending with Planning Commission.
15/4	Kalyan Project	48	0.5	0.5	0.4	4.8	Under planning.
15/5	Lahuki Project	27	0.2	0.2	0.2	2.4	Do.
15/6	Nagtas Project	13	0.1	0.1	0.1	1.5	Do.
15/7	Akni Project	19	0.2	0.2	0.2	2.4	Do.
15/8	Wake Project	22	0.2	0.2	0.2	2.3	Do.
		129	1.8	1.8	1.5	13.4	
	Total of II (a) (i)	378	3.8	3.8	3.2	37.3	

Annexure III (Statement 3)—contd.

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T. M. C.	Utilisation in T. M. C.		Irrigation in thousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
II. (a) (ii) Purna upto Sidheshwar							
18/1	Purna Anicut	21	0.1	0.1	0.1	1.5	In operation.
18/2	Khelna Project	62	0.5	0.5	0.4	8.1	Do.
18/3	Jivarkha Project	30	0.3	0.3	0.2	4.5	Do.
18/4	Jui Project	70	0.7	0.7	0.6	5.4	Do.
		183	1.6	1.6	1.3	19.5	
18/5	Dhamna Project	53	0.6	0.6	0.5	2.4	Pending with Planning Commission.
18/6	Palshi Project	39	0.4	0.4	0.3	3.0	Under planning.
18/7	Pimpalgaon Project	57	0.6	0.6	0.5	4.8	Do.
18/8	Patalganga Project	33	0.3	0.3	0.2	2.7	Do.
18/9	Mandwa Project	17	0.2	0.2	0.2	1.8	Do.
	Total of (18/6 to 18/9)	146	1.5	1.5	1.2	12.3	
	Total of II(a)-(ii) for 9 Schemes	382	3.7	3.7	3.0	34.2	

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
<i>II-(a) (iii) Rest of the Purna upto confluence with Godavari</i>							
22/1	Karpara Project	110	1.4	1.4	1.2	4.5	Pending with Planning Commission.
22/2	Akoli Project	29	0.4	0.4	0.3	3.0	Under planning.
Total of II-(a) (iii)		139	1.8	1.8	1.5	7.5	
<i>II-(b) Sindhphana river upto Manjalgaon</i>							
24/1	Upper Sindhphana	93	0.6	0.6	0.5	6.5	In operation.
24/2	Bendsnra Project	73	0.6	0.6	0.5	9.3	Do.
		166	1.2	1.2	1.0	15.8	
24/3	Ghatsill Project	59	0.4	0.4	0.3	3.0	Pending with Planning Commission.
24/4	Seoni Project	14	0.1	0.1	0.1	1.2	Under planning.
24/5	Kundalika Project	199	1.7	1.7	1.6	12.8	Do.
		272	2.2	2.2	2.0	17.0	
Total of II(b)		438	3.4	3.4	3.0	32.8	
<i>II-(c) Rest of Catchment upto Istapuri</i>							
27/1	Galhati (Aurangabad)	109	1.0	1.0	0.8	10.0	In operation.
27/2	Wan Project	144	1.2	1.2	1.0	12.0	Do.
		253	2.2	2.2	1.8	22.0	

Annexure III (Statement 3)—contd.

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yeild in T. M. C.	Utilisation in T. M. C.		Irrigation in ithousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
27/3	Bodhegaon Project	17	0.2	0.2	0.1	1.2	Pending with Planning Commission.
27/4	Saraswati Project	20	0.2	0.2	0.1	1.8	Report ready.
27/5	Masoli Project	109	1.7	1.7	1.5	12.0	Do.
		129	1.9	1.9	1.6	13.8	
27/6	Galhati (Parbhani)	71	1.0	1.0	0.9	7.2	Under planning.
27/7	Borna Project	48	0.4	0.4	0.3	3.0	Do.
27/8	Dhond Project	19	0.3	0.3	0.2	2.4	Do.
27/9	Musa Project	18	0.2	0.2	0.1	1.8	Do.
27/10	Indrayani Project	54	0.7	0.7	0.6	6.6	Do.
		210	2.6	2.6	2.1	21.0	
	Total II-(c)	609	6.9	6.9	5.6	58.0	
<i>III (a) Manjra sub-basin up-stream of Nizamsagar.</i>							
31/1	Mohesangvi Project	30	0.2	0.2	0.2	2.5	In operation.
31/2	Upper Thirna Project	161	1.5	1.4	1.0	9.2	Do.
		191	1.7	1.6	1.2	11.7	

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand [acres]	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
31/3	Ghirni Project	94	1.5	1.5	1.1	7.0	Under construction.
31/4	Tawarja Project	92	0.9	0.9	0.5	4.6	Report ready.
31/5	Renapur Project	186	1.9	1.8	1.5	12.0	Under planning.
Total of III(a)		563	6.0	5.8	4.3	35.3	
<i>III (b) Manjira below Nizam-sagar</i>							
36/1	Kundral Project	37	0.6	0.5	0.4	4.0	Under construction.
36/2	Karadkhel Project	37	0.7	0.7	0.6	4.4	Pending with Planning Commission.
36/3	Tiru Project	104	1.0	1.0	0.9	8.0	Report ready.
36/4	Whati Project	14	0.2	0.2	0.2	2.5	Under planning.
36/5	Mahalungi Project	15	0.2	0.2	0.1	2.5	Do.
36/6	Pethwadaj Project	37	0.5	0.5	0.4	4.2	Do.
36/7	Methi Project	20	0.4	0.4	0.3	3.9	Do.
Total of III (b)		264	3.6	3.5	2.9	29.5	
<i>IV (a) Godavari below Istapuri upto State boarder</i>							
41/1	Kundla Project	15	0.3	0.3	0.2	3.0	Under construction.
41/2	Seeta Project	13	0.1	0.1	0.1	1.8	Report ready.
41/3	Dangarwadi Project	16	0.2	0.2	0.2	2.7	Under planning
41/4	Devapur Project	19	0.3	0.3	0.2	2.8	Do.
		63	0.9	0.9	0.7	10.3	

Annexure III (Statement 3)—contd.

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
<i>III (b) G. 5 Middle Godavari—</i>							
44/1	Kolegaon Project	48	0.5	0.5	0.4	4.5	Under investigation.
<i>Part II Godavari</i>							
<i>V (a) Penganga river upto chikhal wardha storage</i>							
53/1	Ekburji Project	29	0.5	0.5	0.4	5.4	In operation.
53/2	Nignoor Project	10	0.2	0.2	0.1	6.1	Do.
Total V (a)		39	0.7	0.7	0.5	11.5	
53/3	Parditakmore Project	18	0.3	0.3	0.2	2.0	Pending with Planning Commission.
53/4	Giroli Project	8	0.1	0.1	0.1	1.2	Do.
		26	0.4	0.4	0.3	3.2	
53/5	Sonal Project	52	1.0	1.0	0.9	9.3	Report ready
53/6	Sandwa Project	10	0.2	0.2	0.1	1.4	Under Planning.
53/7	Chikhalgad Project	15	0.2	0.2	0.2	2.4	Do.
53/8	Maran Project	40	0.6	0.6	0.5	6.3	Do.
53/9	Pimpalgaon Project	19	0.3	0.3	0.2	3.2	Do.

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
53/10	Devgaon Project	17	0.3	0.3	0.2	2.9	Under planning.
53/11	Khumbar Kini Project	46	0.6	0.6	0.5	5.8	Do.
53/12	Hivri Project	16	0.4	0.4	0.3	2.9	Do.
53/13	Pardi Project	12	0.3	0.3	0.2	2.5	Do.
53/14	Saloda Project	21	0.5	0.5	0.4	5.0	Do.
53/15	Rauldari Project	8	0.2	0.2	0.2	2.0	Do.
53/16	Dongargaon Project (Nanded)	24	0.4	0.4	0.3	4.3	Do.
53/17	Nagzari Project	14	0.3	0.3	0.2	3.0	Do.
53/18	Amboli Project	21	0.4	0.4	0.3	3.4	Do.
53/19	Loni Project	18	0.3	0.3	0.3	3.5	Do.
53/20	Palaniguda Project	8	0.2	0.2	0.1	1.4	Do.
		340	6.2	6.2	4.9	59.3	
	Total of IV (a)	405	7.3	7.3	5.7	74.0	
	V. (b) Penganga below Chikhal Wardha upto confluence						
58/1	Saikheda Project	158	1.2	1.2	1.0	6.3	Under construction.
58/2	Amal nalla Project	33	0.5	0.5	0.4	5.5	Pending with Planning Commission
58/3	Chapdoh Project	14	0.3	0.3	0.2	2.5	Under Planning
58/4	Antaghar Project	20	0.5	0.5	0.4	1.4	Do.
58/5	Rathod Project	7	0.2	0.2	0.1	1.4	Do.

Annexure III (Statement 3)—contd.

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
58/6	Bahattar Project	8	0.1	0.1	0.1	1.0	Under planning.
58/7	Sonegaon Project	14	0.1	0.1	0.1	1.4	Do.
58/8	Wadi Project	15	0.2	0.2	0.1	1.5	Do.
58/9	Pakodigudam Project	19	0.3	0.3	0.2	3.0	Do.
		97	1.7	1.7	1.2	12.2	
	Total of (b)	288	3.4	3.4	2.6	24.0	
VI. Wardha river upto confluence with Wainganga							
62/1	Upper Wunna Project	49	1.0	1.0	0.8	3.0	In operation.
62/2	Malkhed Project	35	0.4	0.4	0.3	4.8	Under construction.
62/3	Kanholi Project	37	0.9	0.9	0.7	9.5	Do.
		72	1.3	1.3	1.0	14.3	
62/4	Takli Project	33	0.3	0.3	0.2	2.4	Pending with Planning Commission.
62/5	Panchdhara Project	20	0.5	0.5	0.4	5.0	Do.
62/6	Dongargaon Project	8	0.2	0.2	0.1	1.7	Pending with Planning Commission.
62/7	Chargaon Project	51	1.5	0.9	0.8	8.6	Do.
		112	2.5	1.9	1.5	17.7	

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
62/8	Chikalsangvi Project	12	0.2	0.2	0.2	2.2	Under planning.
62/9	Charghar Project	50	0.5	0.5	0.4	4.8	Do.
62/10	Sakli Project	20	0.1	0.1	0.1	1.3	Do.
62/11	Pandhari Project	24	0.2	0.2	0.2	2.0	Do.
62/12	Ner Project	20	0.2	0.2	0.1	1.6	Do.
62/13	Borgaon Project	20	0.4	0.4	0.3	3.6	Do.
62/14	Majra Project	11	0.2	0.2	0.2	2.0	Do.
62/15	Warud Project	12	0.4	0.4	0.3	3.6	Do.
62/16	Nirgunda Project	87	1.6	1.3	1.1	12.6	Do.
62/17	Kopangaon Project	22	0.4	0.4	0.3	4.5	Do.
62/18	Bandara Project	64	1.3	1.3	1.1	14.7	Do.
62/19	Dongargaon Project	22	0.7	0.7	0.6	7.7	Do.
62/20	Sindiwhiri Project	8	0.1	0.1	0.1	1.1	Do.
62/21	Arnalla Project	19	0.3	0.3	0.2	3.3	Do.
62/22	Panjarbothali Project	9	0.1	0.1	0.1	1.0	Do.
62/23	Yeshwada Project	45	0.7	0.7	0.6	7.7	Do.
62/24	Umri Project	12	0.1	0.1	0.1	1.2	Do.
62/25	Madan Project	15	0.4	0.4	0.3	4.2	Do.
62/26	Pothora Project	82	1.9	1.9	1.5	18.0	Do.
62/27	Lal Nalla Project	59	1.5	1.5	1.3	15.0	Do.
62/28	Laban Nalla Project	22	0.4	0.4	0.3	4.2	Do.
62/29	Chandadi Project	31	0.7	0.7	0.6	8.1	Report Ready
62/30	Padmapur Project	25	0.7	0.7	0.5	7.5	Under planning.
62/31	Bamani Project	30	0.6	0.6	0.5	6.4	Do.
		721	13.7	13.4	11.0	138.3	
	Total of (i)+(ii)+(iii)	954	18.5	17.6	14.3	173.0	

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8

VI. *Wainganga-Pranhita river upto confluence with Godavari river (a) Wainganga upto Goshikhurd storage*

79/1	Khairbund Project	..	..	17	0.5	0.5	0.4	10.0	(i) In operation.
79/2	Bodalkasa Project	..	..	24	0.7	0.7	0.6	11.8	Do.
79/3	Chorkamara Project	..	..	29	0.7	0.7	0.6	10.8	Do.
79/4	Chandpur Project	..	..	59	1.1	1.1	0.9	12.6	Do.
79/5	Pandhrabodi Project	..	..	17	0.5	0.5	0.4	4.7	Do.
				146	3.5	3.5	2.9	49.9	
79/6	Managrah Project	..	..	4	0.1	0.1	0.1	2.4	(ii) Under construction.
79/7	Sangrampur Project	..	..	6	0.2	0.2	0.1	2.8	Do.
79/8	Bagheda Project	..	..	10	0.2	0.3	0.2	4.7	Do.
79/9	Sorna Project	..	..	8	0.2	0.2	0.2	3.4	Do.
79/10	Umri Nalla Project (Nagpur)	..	..	29	0.3	0.3	0.2	3.7	Do.
				47	1.1	1.1	0.8	17.0	

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
79/11	Satbhani Project	29	1.2	1.2	0.9	12.2	(iii) Under planning.
79/12	Nilaj Project	16	0.5	0.5	0.4	5.0	Do.
79/13	Salegaon Project	5	0.1	0.1	0.1	1.5	Do.
79/14	Nimgaon Project	11	0.3	0.3	0.2	3.0	Do.
79/15	Badbhadya Project	5	0.1	0.1	0.1	1.5	Do.
79/16	Lonbara Project	7	0.2	0.2	0.2	2.5	Do.
79/17	Sagar Project	9	0.2	0.2	0.1	1.8	Do.
79/18	Hirkund Project	10	0.2	0.2	0.1	2.0	Do.
79/19	Manguti Project	7	0.1	0.1	0.1	1.4	Do.
79/20	Alesur Project	17	0.4	0.4	0.3	5.0	Do.
79/21	Bethar Botali	10	0.2	0.2	0.2	2.2	Do.
79/22	Khekra Nolla Project	35	0.9	0.9	0.6	9.0	Do.
79/23	Pendhari Project	10	0.3	0.3	0.2	3.0	Do.
79/24	Kolar Project	59	1.3	1.3	1.0	14.0	Do.
79/25	Kesar Nalla Project	7	0.2	0.2	0.1	2.0	Do.

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
79/26	Khumari Project	10	0.2	0.2	0.2	2.8	Under planning.
79/27	Chandrabhaga	18	0.4	0.4	0.3	4.1	Do.
79/28	Mordhan Project	15	0.3	0.3	0.2	3.4	Do.
79/29	Sonegaon Project	6	0.1	0.1	0.1	1.7	Do.
79/30	Govan Project	133	2.0	2.0	1.7	24.0	Do.
79/31	Makardhokra	25	0.4	0.4	0.3	4.2	Do.
79/32	Udasa Project	20	0.4	0.4	0.3	4.4	Do.
79/33	Upasia Project	8	0.1	0.1	0.1	1.4	Do.
		472	10.1	10.1	7.8	112.1	
Grand total VI (a)		665	14.7	14.7	11.5	179.0	
<i>VII (b) Below Gosikhurd upto B</i>							
94/1	Gorazari Project	31	1.1	1.1	1.0	10.0	(i) In operation.
94/2	Naleshwar Project	32	0.9	0.9	0.5	4.6	Do.
94/3	Navegaon Project	21	1.3	1.3	0.9	13.5	Do.
		84	3.3	3.3	2.4	28.1	
94/4	Chulbund Project	23	1.1	1.1	1.0	12.8	(ii) Pending with Planning Commission

Serial No.	Name of the Project	Catchment area in square miles	75 per cent dependable yield in T.M.C.	Utilisation in T.M.C.		Irrigation in thousand acres	Remarks
				Gross	Net		
1	2	3	4	5	6	7	8
94/5	Bandarchiva	8	0.2	0.2	0.1	2.0	(iii) Under planning.
94/6	Rengapar Project	15	0.5	0.5	0.4	5.6	Do.
94/7	Heldoh Project	13	0.4	0.4	0.3	4.7	Do.
94/8	Saliatola Project	19	0.8	0.8	0.7	9.0	Do.
94/9	Khunsapur Project	11	0.4	0.4	0.3	4.1	Do.
94/10	Channa Project	16	0.8	0.8	0.7	9.2	Do.
94/11	Butti Nalla Project	97	2.1	2.1	1.8	16.0	Do.
94/12	Gardi Nalla Project	26	1.0	1.0	0.8	11.2	Do.
94/13	Nimghat Project	20	0.8	0.8	0.7	9.2	Do.
94/14	Katai Nalla Project	6	0.2	0.2	0.2	2.4	Do.
94/15	Katewaghari Project	9	0.3	0.3	0.2	3.5	Do.
94/16	Mondhaki Project	10	0.3	0.3	0.2	3.5	Do.
94/17	Dhuni Project	17	0.4	0.4	0.3	4.9	Do.
Total of (iii)		267	8.2	8.2	6.7	85.3	
Total of VII (b)		374	12.6	12.6	10.1	126.2	