

**Minutes of 8<sup>th</sup> meeting of the “Sub-Committee on System Studies for identification of most appropriate alternative Plan” held on 13.05.2016 at New Delhi.**

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The eighth meeting of the “Sub-Committee on System Studies for identification of most appropriate alternative plan” was held on 13.05.2016 at SewaBhawan, CWC, New Delhi under the Chairmanship of Shri P.B.S. Sarma former Professor & Project Director, Water Technology Centre, Indian Agricultural Research Institute, New Delhi and Professor Emeritus, IIT, Delhi. The list of participants who attended the meeting is given at Annex-I.

Shri P.B.S. Sarma, Chairman of the Sub-Committee extended warm welcome to the participants of the meeting. He then requested Shri N.C. Jain, Director (Tech.), NWDA and Secretary of the Sub-Committee to take up the agenda items. Following is the itemwise summary of the discussions and decisions taken during the meeting.

**Item No. 8.0: Confirmation of Minutes of combined meeting of “Sub-Committees for comprehensive Evaluation of various studies/Reports Available on the issue of ILR” and “Sub-Committee for System studies for identification of most appropriate alternative plan” held on 29.09.2015 at New Delhi.**

Minutes of the combined meeting of Sub-Committees for “Comprehensive Evaluation of various studies/Reports Available on the issue of ILR” and “Sub-Committee for System studies for identification of most appropriate alternative plan” held on 29.09.2015 were circulated to all the members vide letter dated 23<sup>rd</sup> October 2015. As no comments on the minutes were received from any of the members of the Sub-Committee, the minutes of the meeting as circulated were confirmed.

**Item No. 8.1: Follow up actions on decisions taken during the 7<sup>th</sup> meeting of the Sub-Committee**

(i) Shri N.C.Jain, Director (Tech.), NWDA mentioned that the preliminary study of Mahanadi (Barmul)-Godavari (Inchampalli) link proposal has been circulated to all the members of both the Sub-Committees through e-mail on dated 7<sup>th</sup> December, 2015.

(ii) The draft Hydrological studies including Water Balance Studies and multi reservoir simulation of Mahanadi – Godavari link was awarded to NIH, Roorkee. NIH has completed draft report and the same has been circulated to all the members of the Sub-Committee alongwith the Agenda.

**Item No.8.2:Hydrological studies including Water Balance Study and Multi reservoir simulation for the proposed Mahanadi – Godavari Link.**

**Hydrological studies and Water Balance Study**

**Discussions**

(i) Dr. S.K. Jain, Scientist ‘G’ NIH, Roorkee made a presentation on the Hydrological studies including water balance for the proposed Mahanadi – Godavari link followed by detailed discussions. It was informed that in the present hydrological studies trend analysis of rainfall data for the period 1951-2012 has been done based on  $1^0 \times 1^0$  gridded data of India Metrological Department and has been compared with earlier studies done by NWDA.

(ii) It was mentioned that regression relationship was established between IMD gridded weighted rainfall and available river water yield series for different sub-basins of Mahanadi to assess the water yield at Barmul dam site for the period 1960-2012. The 75% and 50% dependable flows/yield of Mahanadi at Barmul were estimated to be 49,854 and 61,900 million cubic metres (MCM)/year respectively.

(iii) The trend analysis of annual water yield of river Mahanadi at Barmul for the period 1960-2012 indicated that there is a small decreasing trend in the annual flows which is statistically not significant at 5% significance level.

(iv) Considering the import, export, water requirements for different purposes of Chhattisgarh as assessed by NWDA and that of Odisha as provided by the State Government, and environmental flow, regeneration from irrigation, domestic and industrial water use as decided by the Sub-Committee in the last meeting, the surface water balance at 75% dependability was assessed by NIH as 10,814 MCM.

(v) After detailed discussions, the sub-Committee concluded that the values of Delta for irrigation water need as assumed by Odisha State were too high particularly considering the heavy soils where paddy is grown. The committee advised NIH to verify these values separately for Kharif and Rabi crops with the concerned Regional Research Stations of ICAR/State Agricultural University/ Irrigation/ Water Resources Department in order to assess the irrigation water requirement more scientifically. It was suggested that at least 2 to 3 years actual crop water requirement data should be collected from these Centres to verify the actual Delta for each crop in Odisha State. Further, such values may also be reconciled with the delta values recommended by the NCIWRDP (1999) as well those being adopted by CWC for various irrigation projects.

(vi) Members of the Sub-Committee suggested for further improving the yield calculations and water balance assessment studies using best scientific methods. The Committee further suggested that the discrepancy between the yield values estimated using the data of rainfall for the pre-Hirakud dam period and that of longer period up to 2012, needs to be explained clearly in terms of changes in land use, land cover including forest cover, and trend of rainfall etc.

### **Multi Reservoir simulation study for the proposed Mahanadi-Godavari link project**

(i) With regard to simulation analysis Dr. S.K.Jain mentioned that these studies are in final stage and will be submitted to the Sub-Committee within two weeks.

(ii) Sub-Committee advised NIH to complete Simulation study after modifying the hydrological studies and water utilisation data and submit the final report at the earliest.

### **Brief of conclusions/ decisions**

i) NIH should examine the long term flow series (1902-2012) of Mahanadi basin in terms of assumptions and data uses, computation and findings and also to suggest whether present series (1960-2012) developed by them or long term series (1902-2012) should be adopted.

ii) NIH should reassess crop water requirements (Kharif & Rabi) for the Odisha irrigation projects by using district wise, soil data, evapotranspiration, Pan evaporation data and effective rainfall data. Data may also be obtained from Regional Research Centres of ICAR/State Agriculture Department/State Agriculture Universities, IWMI, Water Technology Centre (Eastern Region) etc. NIH may also reconcile with delta values suggested in the Report of National Commission for Integrated Water Resources Development Plan (1999) as well those being adopted by CWC for irrigation projects in this regard.

iii) Since the representative of Government of Odisha did not attend the meeting, it was decided that their views on the report may be obtained on priority.

(iv) The report based on above comments and suggestion of the members may be revised.

v) It was decided that NIH would complete integrated simulation studies in two weeks. NWDA will provide submergence map for the Manibhadra Project showing submergence at various contour levels and important levels of Mahanadi-Godavari link.

**Item No. 8.3: Water balance study of Godavari basin at proposed Inchampalli dam site**

Inchampalli project, which lies in Telangana State, forms an important component for water transfer proposals from Godavari basin to South. The representative of Telangana State has requested in the meetings of the Special Committee for Inter-linking of Rivers to revise the water balance studies of Godavari Basin so that the present requirements of the newly formed Telangana State are considered properly.

(i) As decided during the 5<sup>th</sup> meeting of the Sub-Committee for System Studies held on 28.07.2015 water balance studies of Godavari basin at Inchampalli dam site have been completed by NWDA.

(ii) Chief Engineer (South) NWDA briefly presented the revised studies. He mentioned that the water balance at 75% and 50% dependability are 7,691 MCM and 22,170 MCM (against the corresponding values of 20,327 MCM and 30,617 MCM assessed earlier by NWDA) respectively.

(iii) It was mentioned that the gross yield at 75% has been reduced due to the downfall trend of rainfall and reported utilisation of water through new projects taken up the concerned States Governments.

(iv) **Conclusions/decisions:**

(i) The Sub-Committee desired that the reasons of reduction in yield and water balance should be clearly reflected in the conclusion of the report.

(ii) It was decided that NWDA should reassess the ultimate water utilisation data, as an independent agency based on the data as given in the published authenticated reports of Telangana State and determine water balance after checking hydrology of the basin up to Inchampalli dam site.

(iii) The issue of considering water transfer at dependability lesser than 75% was discussed. However, it was decided to continue with 75% dependability considering all relevant aspects.

(iv) It was decided that Water Balance Study may be revised after reviewing the ultimate water utilisation data.

**Item No. 8.4: Any other item with the permission of the chair.**

-NIL-

The Meeting ended with a vote of thanks to the Chair.

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**Participants of the 8<sup>th</sup> meeting of the Sub-Committees for system studies for identification of most appropriate alternative plan held on 13.05.2016 at New Delhi.**

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| 1. | Shri P.B.S. Sarma<br>Former Prof.(Emeritus) IIT, Delhi | Chairman  |
| 2. | Prof.Kamta Prasad,<br>Chairman, IRMED, Delhi.          | Member    |
| 3. | Shri M. Illangovan,<br>Former Chief Engineer, CWC      | Member    |
| 4. | Dr.S.K.Jain<br>Scientist G, NIH, Roorkee               | Member    |
| 5. | Prof.Sanjeev Kapoor<br>IIM, Lucknow                    | Member    |
| 6. | Shri N.C. Jain<br>Director (Tech), NWDA                | Secretary |

**Special Invitee:**

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| 7. | Shri A.D.Mohile,<br>Former Chairman, CWC, New Delhi       |  |
| 8. | Shri M. Gopalakrishnan,<br>Former Secretary General, ICID |  |
| 9. | Shri Vinay Kumar,<br>Chief Engineer (HSO), CWC            |  |

**Special Invitee, NIH**

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| 10. | Shri P.K.Mishra<br>Scientist 'B'<br>NIH, Roorkee |  |
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**Special Invitees, NWDA****Annex.-I (Contd.)**

11. Shri S. Masood Husain,  
Director General, NWDA.
12. Shri R.K.Jain  
Chief Engineer (HQs)  
NWDA, New Delhi
13. Shri M.K.Srinivas,  
Chief Engineer (South),  
NWDA, Hyderabad
14. Shri H.N.Dixit,  
Chief Engineer (North),  
NWDA, Lucknow
15. Shri K. P. Gupta,  
Superintending Engineer,  
NWDA, New Delhi
16. Shri O.P.S.Kushwah  
Superintending Engineer,  
NWDA, New Delhi
17. Shri B.L.Sharma,  
Superintending Engineer,  
IC,NWDA, Bhubaneswar
18. Shri K.P.Singh  
Senior Consultant, NWDA
19. Shri R.K.Kharbanda,  
Deputy Director, NWDA
20. Shri Nizam Ali,  
Consultant (Tech.), NWDA
21. Shri N.P.Sahu,  
Assistant Director, NWDA