STANDING COMMITTEE ON WATER RESOURCES
(2016-2017)

18

SIXTEENTH LOK SABHA

MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION

INDIGENOUS AND MODERN FORMS OF WATER CONSERVATION – TECHNIQUES AND PRACTICES

{Action Taken by the Government on the Observations / Recommendations contained in the Thirteenth Report (Sixteenth Lok Sabha) of the Standing Committee on Water Resources}

EIGHTEENTH REPORT

LOK SABHA SECRETARIAT

August, 2017 / Shravana,1939 (Saka)

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Presented to Lok Sabha on 10.08.2017
Laid in Rajya Sabha on 10.08.2017

LOK SABHA SECRETARIAT
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(2016-17)

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INTRODUCTION

I, the Chairperson, Standing Committee on Water Resources (2016-2017) having been authorized by the Committee to submit the Report on their behalf, present the Eighteenth Report on the Action Taken by Government on the Observations / Recommendations contained in the Thirteenth Report (Sixteenth Lok Sabha) of the Standing Committee on Water Resources on the subject "Indigenous and Modern forms of Water Conservation – Techniques and Practices".

2. The Thirteenth Report of the Committee was presented to Lok Sabha and laid in Rajya Sabha on 16 March, 2017. The replies of the Government to all the recommendations contained in the Report were received on 22 June, 2017.

3. The replies of the Government were examined and the Report was considered and adopted by the Committee at their sitting held on 8 August, 2017.

4. An analysis of the Action Taken by the Government on the Observations / Recommendations contained in the Thirteenth Report (Sixteenth Lok Sabha) of the Committee is given in Annexure-VI.

NEW DELHI
04 August, 2017
13 Shravana, 1939(Saka)

HUKUM SINGH,
Chairperson,
Standing Committee on Water Resources

CHAPTER I

REPORT

This Report of the Standing Committee on Water Resources deals with the action taken by the Government on the observations / recommendations contained in their Thirteenth Report (16th Lok Sabha) on the subject "Indigenous and Modern forms of Water Conservation – Techniques and Practices" which was presented to Lok Sabha on 16.03.2017.

2. Action Taken Notes were received from the Government on 22 June, 2017, in respect of all the 16 observations / recommendations of the Committee, which have been categorized as follows:-

(i) Observations / Recommendations which have been accepted by the Government:
Para Nos. 1, 4, 5, 7, 8, 9, 10, 11, 13, 15 and 16

(Total – 11)

(ii) Observations / Recommendations which the Committee do not desire to pursue in view of the Government's replies:
Para Nos. NIL

(Total – NIL)

(iii) Observations / Recommendations in respect of which replies of the Government have not been accepted by the Committee:
Para Nos. 2, 3, 12 and 14

(Total – 04)

(iv) Observations / Recommendations in respect of which final replies of the Government are still awaited:
Para No. 6

(Total – 01)

2. The draft comments (i.e. Recommendation Para Nos. 1, 3, 4, 9, 10, 12, 14 and 16) along with Replies of the Government will form the Chapter-I of the Report.

3. The Committtee will now deal with the action taken by the Government on some of the observations / recommendations in the succeeding paragraphs.

A. Low Per Capita Water Storages and Availability in India

Recommendation (Para No. 1)

4. The Committee noted that the per capita live water storage in India is about 209 m^3 (cubic meters) based on population of 2011 census, which is far below 1000 cubic meters, the minimum threshold for identifying water-scarcity condition of a locality, State or country. The Committee also noted that as per the information provided by the Ministry of Water Resources, River Development and Ganga Rejuvenation, Russia and Australia can sustain consecutive droughts for about 4 and 3 years respectively. However, India cannot sustain drought beyond one non-Monsoon season due to low per capita storage, and as such, thus may face acute stress, if any year happen to be a drought year. Further, whereas the average water availability in the country remains more or less fixed according to the natural hydrologic cycle, the per capita availability is reducing progressively owing to increasing population, from 2209 cu. m. (cubic meter) per year in 1991 to about 1545 cu. m. Per year in 2011. The Committee noted with concern that the country is steadily hurtling towards a great water crisis in the near future due to the prevailing near water-scarcity situation in the country as well as the regressive trend towards declining capita water availability, specially since 1991. The Committee, therefore, recommended that urgent, specific initiatives be made by the Government to increase the live per capita water storage as well as per capita water availability in India. In this connection, the

Committee noted the Ministry's observation that creation of storage-based water resources projects on appropriate sites can result in increased per capita live storage capacity without compromising the ecological balance in the country. The Committee therefore, strongly recommended the Government to (i) compile information / data regarding the large and medium dams / reservoirs presently under implementation in the country separately, (ii) make a review of the status of their execution including the bottlenecks (if any) hampering the timely completion, and (iii) make a time-frame for completion of each of these large / medium dams or reservoirs. The Committee also desired to be apprised of the initiative taken by the Government in this regard.

5. The Ministry, in its action taken note has replied as follows:

> "The per capita live water storage in India is about 209 m^3, based on population of 2011 census, which is far below 1000 cubic meters, the minimum threshold for identifying water-scarcity condition of a locality, state of a country. In this regard, it is to mention that the per capita live storage and per capita water availability (Falkenmark Water Stress Indicator) are two different things. The per capita availability of water in the country is 1545 cubic meters as per the 2011 census which is more than 1000 cubic meters. National Register of Large Dam (NRLD) is a compilation of the dams in the country prepared as per information received from the State Government/Authority concerned. The information which is sought cannot be derived from NRLD and additional work is required to be conducted. For timely completion of old projects efforts are being made to expedite old projects under PMKSY-AIBP programme of Government of India and several new projects are being initiated at the same time. 99 ongoing AIBP projects have been identified in consultation with the States for completion by Dec. 2019."

6. The Committee are not fully satisfied with the information as furnished by the Ministry. The Committee note from the reply of the Ministry the fact that the per capita live water storage of 209 m3 in India (2011 census); which is far below 1000 cubic meters i.e., the minimum threshold for identifying water scarcity condition of a locality, State of a country. They are understand that more per capita water storage would

eventually result into more per capita water availability in future in the country, which is reducing progressively owing to increasing population. The Committee would, therefore, emphasize that apart from compilation of the data about the apart from compilation of large dams by National Register of Large Dam (NRLD), the Government should conduct additional work and compile information / data regarding the large and medium dams / reservoirs presently under implementation in the country, the status of their execution including the bottlenecks (if any) hampering the timely completion thereof and also fix a time-frame for completion of each of these dams / reservoirs, and apprise the Committee accordingly. The Committee are happy to note that efforts are being made by the Government of India for timely completion of old projects under Pradhan Mantri Krishi Sinchai Yojana (PMKSY) – Accelerated Irrigation Benefits programme (AIBP) and that several new projects are also being initiated at the same time. In this context, the Committee would further desire categorically to be informed of the new projects being started by the Government under PMKSY-AIBP programme - which would have potential to increase the per capita water storage in the country as also the extent thereof. Also noting that 99 ongoing AIBP projects have been identified in consultation with the States for completion by December 2019, the Committee would also like to be informed about the details fo such ongoing AIBP projects, State-wise/UT-wise along with their status of completion so far within three months of the presentation of this Report.

B. Traditional Water Recharge / Harvesting Practices

Recommendation (Para No. 3)

7. The Committee observed from the information provided by the Ministry that India had a rich tradition of water harvesting, which is more than two millennia old, viz. the Kuhals of Jammu, Kulsi of Himachal Pradesh, Guls of Uttarakhand, Pat of Maharastra, Zings of Ladakh, Zabos of Nagaland, Eris of Tamil Nadu, Keres of Karnataka, Tankas / Kundis / Bawdis/ Jhalaras, etc. of Rajasthan. Sadly, however, these age-old traditional rain-harvesting systems have fallen into disuse with the introduction of piped water supply system. In these connection, the Committee, further noted that when the information pertaining the status of indigenous water harvesting methods/practices in India including their contribution to water resources conservation and management was south, the Ministry have replied that about 6 lakh tanks/ storages in India are used for minor irrigation (MI) schemes as per 4th Minor Irrigation Census, out of which 5 lakh are in use at present. The Committee also categorically desired to know whether any study has been made so far regarding the efficacy, merits, viability or sustainability of traditional water recharge/ harvesting techniques and also to state the efforts made by the Government to preserve, improve and develop the indigenous water recharge / harvesting methods in India. To this query, however, the Ministry have not furnished the relevant reply but have merely cited the various objectives of the scheme or Repair, Renovation and Restoration (RRR) of Water Bodies being implemented by the Government of India since the 10th Plan. The Committee deplored the cavalier attitude of the Ministry, and they recommended that the Ministry immediately take steps to institute a panel of experts, professionals drawn from various reputed institutions in the country for undertaking a study on the efficacy, merits, viability or

sustainability of traditional water recharge /harvesting techniques in India as existing now and apprise the Committee of the findings of their study. The Committee also desired that the Ministry hold consultations with various State / UTs with a view to devise ways and means to preserve, improve and develop indigenous water recharge / harvesting methods in the country that have fallen into disuse for various reasons. The Committee had liked to be updated about the action taken in the matter.

8. The Ministry, in its action taken note has replied as follows:

> "In order to preserve and improve the water storing capacity of water bodies, based on NRSC data, Unique Identity (UID) for all the water bodies has been generated under India-WRIS. The India-WRIS has generated information for 7,98,909 water bodies with the support of NRSC.
>
> An Inter-sectoral Advisory Group (ISAG) was constituted in National Water Mission to advice and review the progress made in respect of Goal-III which is "Focussed Attention to Vulnerable Areas including Over-exploited Areas". The Group is headed by Chairman, Central Ground Water Board with members from Central Water Commission, Ministry of Rural Development, Ministry of Panchayati Raj, Ministry of Agriculture and Farmers Welfare, Ministry of Drinking Water and Sanitation, Ministry of Environment, Forests and Climate Change and Principal Secretaries of Water Resources of four State Governments. One of the important objectives of this Group is promotion of traditional system of water conservation and to take up matters related to timely release of funds for completion of backlog RRR projects with Ministry. ISAG is pursuing the **convergence** programme for ground water recharge with MNREGA, Watershed Development Programmes, NWM and CGWB. This committee also recommended that the monitoring mechanism for ground water recharge will be through Principal Secretary (Water Resources/Irrigation/Rural Development Department) of the State."

9. The Committee note from the reply of the Government that an Inter-Sectoral Advisory Group (ISGAG) was constituted in National Water Mission (NWM) to advise and review the progress made in respect of Goal-III which is "Focussed Attention to Vulnerable Areas including Over-exploited Areas", and one important objective of this Group is promotion of traditional system of water conservation and to take up matters

related to timely release of funds for completion of backlog RRR projects with Ministry. The Committee feel that given the dire need for reviving traditional water recharge / harvesting practices in India, such an internal governmental body may not meet the intended objective of reviving indigenous water recharge / harvesting methods in the near future. The Committee, therefore, reiterate their earlier recommendation that the Ministry immediately take steps to institute a panel comprising of experts, professionals drawn from reputed institutions of the country for undertaking a study on the efficacy, merits, viability and sustainability of traditional water recharge / harvesting techniques in India as it exists for now as also for the future and apprise the Committee of the findings of their study. They further desire that instead of focussing attention on a centralized scheme of Repair, Renovation and Restoration (RRR) of Water Bodies as is being done since the 10th Plan, the crucial participation of States / UTs in the Scheme may also be sought and for achieving it, necessary consultations be held by the Ministry with all the State/UT Governments. The Committee are also of the view that, If necessary, the States / UTs may also be incentivized with liberal financial assistance to take active part in the efforts on reviving traditional water recharge / water harvesting methods.

C. Modern Water Conservation Techniques – Drip and Sprinkler systems

Recommendation (Para No. 4)

10. The Committee observed that Drip and Sprinkler irrigation systems constitute the chief modern water conservation techniques in India. In Drip irrigation, water is delivered at the root

zone of the crops through emitters like drippers, micro sprinklers, micro jets, misters, fan jets, micro sprayers, foggers, etc. This method has less water requirement resulting in water saving, higher fertilizer application efficiency, energy conservation, higher water use efficiency, and is feasible in different terrains and suitable for problematic soils and prevention of water logging. Sprinkler irrigation system requires energized pump sets, irrigate more uniformly than gravity systems, require much less maintenance when compared with conventional pressurized irrigation systems, eliminates seepage and evaporation losses, has no requirement of skilled manpower, no expensive land levelling, and is suitable for irrigation of crops with high density and particularly effective in sandy undulating terrains and widely used for cereals, pulses, seeds and other field crops. The Committee were happy to note that State Governments are encouraging adoption of these water saving techniques through provision of subsidies to farmers on purchase of these systems. The Committee further noted that as per the 12th Plan guidelines of Command Area Development and Water Management (CAD&WM) programme, a minimum of 10% of Culturable Command Area (CCA) of each project is to be covered through micro irrigation and the Central Assistance to the tune of 50% is provided to the States for development of infrastructure to facilitate use of sprinkler / drip irrigation. The Committee also noted that through 'fertigation' process in sprinkler / drip irrigation systems, more efficiency is achieved by combining fertiliser as well as water soluble fertilizers, thereby increasing fertilizer use efficiency from 80 to 90 per cent. Taking cognizance of the paramount need for conservation of water in India through traditional as well as modern methods, the Committee desired that micro irrigation comprising Drip and Sprinkler irrigation techniques be taken up in the country as a popular movement with a great sense of urgency by both the Central and the

State Governments and proactive action needs initiated by the Government in this regard. The Committee also recommended that apart from the provision of incentives provided through CAD&WM programme by the Government, the Ministry should also come up with novel initiatives to incentivise the States/UTs to adopt Sprinkler and Drip irrigation systems for achieving water use efficiency in agriculture and other allied sectors of the country without loss of further precious time, and also take steps to promote 'fertigation' across the country. They had further strongly recommended the Government to promote and propagate Drip and Sprinkler irrigation methods through the print and electronic media such as television, cinema, internet etc. so as to create necessary awareness among the farming community as well as general public. They also had liked to be apprised of the progress made in this direction through the initiatives taken by the Ministry.

11. The Ministry, in its action taken note has replied as follows:

> "Looking to the vast potential under Micro-Irrigation, the Government of India set up a '*Task Force on Micro Irrigation'* in the year 2004, which assessed that the potential of coverage area under Micro-Irrigation was of the order of 69 Mha. (27 Mha. under drip irrigation and 42.5 Mha. under sprinkler). The Task Force also suggested that the Planning Commission should make it obligatory for the project authorities to implement Micro-Irrigation in at least 10% of the Command Area while sanctioning new irrigation projects. Ministry of Water Resources, River Development and Ganga Rejuvenation is providing Central Assistance to States under *Command Area Development and Water Management Programme (CAD&WM*) for development of infrastructure to facilitate use of drip/sprinkler irrigation system as an alternative to construction of field channels. The assistance under this item will be towards construction of stilling tank, pump house and laying of conveyance pipes up to farmer's field.
>
> The Guidelines for Central Assistance for CAD works in prioritized AIBP Irrigation Projects including a coverage of 10% of CCA of each project for infrastructure cost of micro irrigation have already been circulated during January, 2017. The implementation of micro irrigation is proposed to be up-scaled to 30% of CCA of the projects under a new incentivization scheme for bridging the irrigation gap, which is under State level consultation after "in Principle" approval of Ministry of Finance. National Water Mission has organized about 70 training/ mass awareness programmes (about 14200

participants) for promoting efficient use of water in irrigation sector including water conservation."

12. The Committee note that the Ministry of Water Resources, River Development and Ganga Rejuvenation is providing Central Assistance (CA) to States under Command Area Development and Water Management (CAD&WM) programme for the development of infrastructure to facilitate the use of Drip/Sprinkler irrigation system as an alternative to construction of field channels. They also note that the Government of India set up a 'Task Force on Micro Irrigation' in 2004, which suggested that the Planning Commission should make it obligatory for the Project Authorities to implement Micro Irrigation in at least 10% of the command area while sanctioning new irrigation projects, and that the Guidelines for Central Assistance in CAD works in prioritized AIBP projects including a coverage of 10% of Culturable Command Area (CCA) project for infrastructure cost of Micro Irrigation were circulated in January, 2017 and further that the implementation of Micro Irrigation is proposed to be up-scaled to 30% of CCA of the projects under a new incentivization scheme for bridging the irrigation gap, which is under State level consultation 'in principle' approval of Ministry of Finance. The Committee recommend the Government to strictly enforce the Guideines for CA for CAD works in prioritised AIBP projects. The Committee strongly recommend further that the process of State level consultations pertaining to up-scaling of Central Assistance to the tune of 30% towards infrastructure cost of Micro Irrigation under the new incentivization scheme for bridging up the irrigation gap be expedite and concretized at the earliest. Noting further that the National Water Mission (NWM) has organised about 70 training/mass awarenss programmes involving about 14,200 participants for promoting efficient use of water in

the irrigation sector including water conservation, the Committee also recommend the Ministry to initiate specific steps to promote 'fertigation' and popularize Micro Irrigation in the print and electronic media. The Committee would further like to be apprised of the gist of recommendations of the 'Task Force on Micro Irrigation' (2004) and the total funds released to States/UTs as of now as CA for Micro Irrigation under CAD&WM programme.

D. Water Users' Associations

Recommendation (Para No. 9)

13. The Committee noted the Ministry's observation that unless the water users / Water Users Association (WUAs) are sensitivized for efficient water use practices and rope in for water conservation, the on-ground improvement is a bit difficult, which thereby underlines the need to have lucrative incentivizing provisions to make them active stakeholders rather than the end users. The Committee fully concurred with the view of the Ministry of this issue, and they strongly recommend that the Ministry bring out a Model Bill to be adopted by all States / UTs, which would provide legal framework for enactment of Participatory Irrigation Management (PIM) by them. The Committee also desired that the Ministry immediately enter into consultations with all the States / UTs for ensuring the enactment of PIM expeditiously in their respective territories providing for formation of a robust, efficient network of Water Users Association (WUAs) all over the country. The Committee further liked to be updated about the status of participatory' approach to management of water resources, i.e. enactment of PIM legislation and formation and functioning of WUAs in different States/UTs of the country. They also strongly recommended that a periodic monitoring and review mechanism on the working

and performance of WUAs be worked out by the Ministry so as to eliminate the shortcomings noticed in their functioning, if any.

14. The Ministry, in its action taken note has replied as follows:

> "Ministry of Water Resources, River Development and Ganga Rejuvenation has been promoting Participatory Irrigation Management (PIM) in the country to enact new irrigation acts/amending the existing irrigation acts for facilitating PIM so that the farmers are involved in maintenance of the created assets. Accordingly 16 States viz. Andhra Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Nagaland, Orissa, Rajasthan, Sikkim, Tamil Nadu and Uttar Pradesh have enacted legislation for involvement of farmers in irrigation management. The matter is being pursued with the State Government who have not yet enacted PIM Acts. The working and performance of WUAs will be monitored and strengthened through involvement of social facilitators as per provisions made in the Guidelines for central assistance under CADWM Programme. NWM, MoWR, RD & GR has initiated action to draft Model Bill on Participatory Irrigation Management (PIM) Act which is under finalization stage."

15. The Committee are happy to note that the Ministry of Water Resources, River Development and Ganga Rejuvenation has been promoting Participatory Irrigation Management (PIM) in the country to enact new irrigation Acts / amending the existing irrigation Acts for facilitating PIM so that the farmers are involved in maintenance of the created assets. The Committee also note that 16 States, viz. Andhra Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra Nagaland, Odisha, Rajasthan, Sikkim, Tamil Nadu and Uttar Pradesh have enacted legislations for the involvement of farmers in irrigation management. The Committee would like to be informed of the number of Water Users' Associations (WUAs) formed under PIM in various States/UTs including the total area coverage, the total incentives (or funds) given by Government (State/UT-wise) till date. The Committee also desire that the Government speedily complete the Draft Bill on PIM for which the National Water Mission had already initiated action and which is stated to be under finalization stage.

The Committee desire, in particular, that immediately thereafter, consultations with the States/UTs may be initiated (both with the 16 States who enacted PIM legislation and the remaining States) with a view to enact PIM Act in the light of recommendations contained in the Model Bill. Side by side, the Committee recommend that a thorough review / evaluation of the performance and working of WUAs in different States/UTs of the country be made, including the shortcomings noticed and necessary corrective measures be taken / proposed to be taken by the Government at the earliest. The Committee would like to be apprised of action taken by the Government in this regard.

E. Command Area Development and Management

Recommendation (Para No. 10)

16. As per the Ministry of Water Resources, River Development and Ganga Rejuvenation, a minimum 10% of Cultural Command Area (CCA) of each project is to cover through micro irrigation under the 12th Plan guidelines. Further, Central Assistance (CA) to the tune of 50% is provided to the States for development of infrastructure to facilitate use of sprinkler/drip irrigation systems as an alternative to on-farm development works. Three schemes had been sanctioned in respect of micro irrigation works in 12th Plan, viz. Development of pressure irrigation in command area of six lift schemes of Indira Gandhi Nahar Pariyojana (IGNP), Stage-II, Rajasthan, Kandi Canal CAD&WM project, Punjab, and Kotla Branch, Part-II, Punjab. Whereas CA of a mere Rs.10.85 crore and Rs. 4.01 crore had been released in respect of six lift irrigation schemes under IGNP, Staqge-II (Rajasthan) and Kotla Branch, Part-II(Punjab), no such release had been made for Kandi Canal CAD&WM project (Punjab) although 12th Plan is shortly coming to an end, which speak volumes about the casualness with which the execution

of the CAD&WM projects/schemes are being done by the Government. The Committee, therefore, strongly recommended the Government to take immediate steps for release of the full amount of estimated Central Assistance for each of the three CAD&WM projects / schemes within this financial year (2017-18), viz. Six lift schemes of IGNP, Stage-II, Rajasthan (Rs.1658.80 crore) Kandi canal CAD&WM project, Punjab (Rs.73.44 crore) and Kotla Branch, Part-II project, Punjab (Rs.38.325 crore) and apprise them of action taken in this regard. The Committee also noted that the Central Water Commission have undertaken 35 (thirty-five)studies to make a realistic assessment of water use efficiency for completed major / medium projects under Plan scheme of the Ministry, the recommendations / results of the study reports about interventions required / step to be taken up, have reportedly been sent to the concerned State Governments for taking necessary action. The Committee desired to know the specific follow-up action taken by the concerned States where such recommendations / results of study reports had been sent by the Government, and also desired that the Ministry impress upon these State Governments to accord priority to taking the required remedial action for each of these projects. They also desired the Ministry to take new initiatives with the States for improving water use efficiency in the form of guidelines / directives which would broadly include these measures, i.e. volumetric measured supply of water at field levels to be monitored by WUAs, levy of certain minimum water tariff to discourage wasteful water withdrawal from irrigation systems, enactment of PIM Act with empowerment of Water Users' Association (WUAs), proper maintenance and management of surface water irrigation system so as to give an assured water supply for each field of the command area. The Committee had desired to be apprised of the action in this regard.

17. The Ministry, in its action taken note has replied as follows:

"During 2015-16, Pradhan Mantri Krishi Sinchai Yojana (PMKSY) was launched with aims of enhancing physical access of water on farm and expanding cultivable area under assured irrigation, improving on-farm water use efficiency, introducing sustainable water conservation practices etc. and central assistance was released to development of Pressure Irrigation of Command Areas of 6 Lift schemes of IGNP Stage-II, Rajasthan and Kotla Brach Part-II, Punjab for micro-irrigation, as per physical and financial target proposed by the State Governments concerned. No central assistance could be released to Kandi Canal Project, Punjab during 2015-16 which did not submit proposal with physical and financial targets. CAD works have now been restricted to 99 priority AIBP projects for implementation under CADWM programme from 2016-17 onwards; and the development of Pressure Irrigation of Command Areas of 6 Lift schemes of IGNP Stage-II, Rajasthan, Kotla Branch Part-II and Kandi Canal Project, Punjab are not covered in the list of prioritized projects. The outstanding CADWM projects including the above mentioned projects are proposed to be covered under the new Incentivization Scheme for Bridging the Irrigation Gap. The suggested measures for improving water-use efficiency and for strengthening of Participatory Irrigation Management will also be included in the new proposed scheme. The final reports of 35 WUE Studies (now from 7 States) were sent with request to appraise the Ministry about the feedback on the action taken, based on the recommendations contained therein, of the respective WR Projects. None of the States have responded, so far. However, the seven States are being re-approached for the feedback as also, impressed to accord high priority to it.

It is also to add that under new initiatives - Guideline for improving WUE in Irrigation, Domestic & Industrial Sectors – November, 2014 have been prepared and available at MoWR, RD & GR web portal."

18. As per the Ministry's reply, no Central Assistance (CA) could be released to Kandi Canal CAD&WM Project, Punjab (Rs. 73.44 crore) during 2015-16 due to non-submission of proposal by the Government of Punjab with physical and financial targets and CAD works have now been restricted to 99 priority AIBP projects for implementation under the CAD&WM Programme from 2016-17 onwards. The Committee desire the Government to ask the State Government of Punjab to expedite submission of project proposal with physical and financial targets with respect to Kandi Canal CAD&WM project, Punjab. Noting further that 6 Lift schemes of IGNP, Stage-II, Rajasthan, Kandi Canal CAD&WM project, Punjab and Kotla Branch, Part-II project, Punjab are not

included in the list of 99 priority AIBP projects, the Committee would like to be informed categorically about the reasons for non-inclusion of these projects under CAD&WM programme since 2016-17. The Committee further note that the final reports of 35 water use efficiency (WUE) studies for CAD&WM projects from 7 States were sent to these States with the request to apprise the Ministry about the feedback on the action taken, based on recommendations contained therein, of the respective water resources projects; to which none of the States have so far responded. The Committee would like the Government to pursue the matter with the State Governments for submission of the feedback at the earliest. They also desire that general guidelines / directives for improving water use efficiency specially for CAD&WM projects be formulated and issued to all States/UTs - which would broadly include these measures, viz. volumetric measured supply of water at field levels to be monitored by WUAs, levy of certain minimum water tariff to discourage wasteful water from irrigation systems, proper maintenance of surface water irrigation system to give assured water supply to each field of the command area, and enactment of PIM Act with empowerment of WUAs.

F. Cropping Pattern and Water Conservation

Recommendation (Para No. 12)

19. The Committee noted the Ministry's reply that change of cropping pattern by farmers, specially from less water demand crops to high water demands crops such as sugar cane and paddy induces failure of the designed irrigation system to irrigate the entire command area, resulting in the tail-end farmers being deprived of irrigation water. Hence, it is necessary to enforce the proposed cropping pattern in the project area for effective management of water so

that each field in command could get adequate water. The Committee also noted that State Governments are encouraging adoption of water-saving technologies, such as sprinkler and drip irrigation system, through provision of subsidies to the farmers on the purchase of these systems, which are also recommended for achieving higher irrigation efficiencies and could be used for very small-sized holdings. However, the adoption of these technologies by poor farmers would depend heavily on the supply of information, material and service for installation. In this connection, the Committee noted that para 6.5 of the National Water Policy, 2012 contains provision which stresses water saving in irrigation use, viz. "water saving in irrigation use States in of paramount importance. Methods like aligning cropping pattern with natural resources endowments, micro irrigation (drip, sprinkler etc.) automated irrigation operation, evaporation – transpiration reduction, etc., should be encouraged and incentivized." Keeping in view the fact that the bulk of farmers in India are poor who may not be in a position to avail of the tools for water-saving technologies, the Committee desired the Ministry to devise innovative steps to incentivize the farmers for adoption of these water-saving technologies in a big way, and also to explore avenues for encouraging farmers to stick to the agreed cropping pattern for effective water management so that each field in the command area including tail-end farmers get adequate water supply throughout the year. Assuming further that adequate finances may not be available either with the State/UTs or farmers, the Committee also recommended the Government to encourage private sector participation in agriculture and water resources sector specially in the micro irrigation. The Committee also desired the Ministry to make a study on the impact of cropping pattern on water conservation in the country with the help of individual experts / professionals and research institutes under the Government for identifying the

shortcomings noticed and advising solution so that the results of such a study may be disseminated to the States/UTs, farmers, water users, etc. for their benefits. The Committee had liked to be informed about the action taken in this regard.

20. The Ministry, in its action taken note has replied as follows:

> "99 ongoing AIBP projects have been identified in consultation with the States for completion by Dec. 2019. The Union Government has approved arrangement of funds both for Central Assistance and State Share from a Long Term Irrigation Fund (LTIF) through NABARD. During 2016-17, Central Assistance of Rs.3307.9 crore was released to these prioritized projects under AIBP. Further, State share amounting to about Rs. 3334 crore was also released through NABARD for these prioritized projects. 21 projects having irrigation potential of 5.22 lakh Ha., are expected to be complete by June, 2017. To reduce the wastage of water*, parri passu* implementation of CAD works in respect of these 99 ongoing projects is being done. Also, the states are emphasized to use piped water supply and coverage of command area by micro-irrigation system wherever feasible and this is one of the condition in the revised MoU being signed with the States in respect of 99 on-going AIBP projects under funding in PMKSY-AIBP."

21. The Committee note that the Government approved arrangements of funds both for Central Assistance (CA) and State share from a Long-Term Irrigation Fund (LTIF) through the National Bank for Agriculture and Rural Development (NABARD), and further that during 2016-17, CA to the tune of Rs. 3,307.9 crore was released for 99 ongoing AIBP Projects identified for completion by December, 2019. However, the Committee feel that the Central Assistance alone would not produce tangible result in the efforts of the farmers to adopt water-saving technologies including Micro Irrigation (Drip and Sprinkler techniques) for efficient water utilization, for which the Committee had recommended the Government to encourage private sector participation in agriculture and water resources sector specially in the Micro Irrigation. The reply of the Government is silent on this aspect of the Committee's recommendation. The Committee had also recommended that the Ministry to make a study about the impact of

cropping pattern on water conservation in the country with the help of individual experts/professionals and research Institutes of the Government for indentifying the shortcomings and advising solutions thereto so that the results of such a study may be disseminated to the States/UTs, farmers, water users, etc. for their benefits. The reply of the Ministry does not provide any information about this as well. The Committee desire the Ministry to clearly apprise about the action taken by them in respect of these two recommendations - which has not been indicated in the Action Taken Reply. The Committee further desire the Government to explore avenues for encouraging farmers to stick to the agreed cropping pattern for effective water management so that each field in the command area including the tail-end farmers receive water supply required for the purpose throughout the year.

G. National Water Mission and Study of Impact of Climate Change on water resources

Recommendation (Para No. 14)

22. The Committee observed that to achieve the goal for "comprehensive water data base in public domain and assessment of the impact of climate change on water resources" 878 Hydrological Observation Stations (HOS) have been established in different basins, and 800 new HOS have been target to be established by Central Water Commission(CWC) in 12th Plan. The Committee also noted that CWC has a target of 200 Automatic satellite-based telemetry system for financial year 2016-17 for hydrological network, real time information, improved water resources assessment, planning and flood forecasting, out of which 57 telemetry systems have been achieved upto December, 2016. Besides, the Committee had been informed that studies of impact of climate change on water resources for seven river basins

(Mahanadi, Mahi, Luni, Tapi, Sabarmati, Subarnarekha and west flowing rivers from Tadri to Kanyakumari) in association with research institutes like IITs, IISc and NIH have been approved, and work on a study on statistical downscaling of global climate models for the river basins (approved in 2016) has been awarded. The Committee desired that the Ministry chalk out action plan for achieving the goal of 800 new hydrological stations to be set up by CWC during 12th plan and also the target of 200 Automatic satellite based telemetry system during 2016-17 as planned by CWC. Further, progress of work pertaining to studies on impact on climate change on water resources for the said seven river system for which work has been awarded to the project implementing agencies, also be constantly monitored by the Ministry and apprised to the Committee. In addition, the Committee also noted that, NWM in association with the Asian Development Bank (ADB) has completed the study "Operational Research to support mainstreaming of integrated flood management under climate change" with focus on community participation, and two pilot studies have been completed for Burhi Gandak basin in Bihar and Brahmani Baitarani basin in Odisha for which the project reports have been sent to State Government for taking necessary action / implementation. The Committee had liked the Ministry to keep tab on the matter so that a tangible outcome emerges from these two pilot studies and an awareness on the impact of climate change on water resources related issues is created in the country as a whole.

23. The Ministry, in its action taken note has replied as follows:

> "a) There is a provision to install 629 telemetry systems at existing ad newly proposed stations under the approved SFC memo for the scheme "Flood Forecasting". Out of this, 65 stations have been installed so far during XII Plan. The sites have been rationalised based on the requirement of Rainfall based Hydrodynamic Flood Forecasting Models being developed for various basins. Based on this rationalisation,

tenders have been floated for 458 Stations and work has been awarded during March, 2017 under different river basins organisations of Central Water Commission. The same are under process of installation.

b) Out of the total 800 new hydrological observations sites proposed, 716 are in final stage of installation and can start observation with support of additional manpower.

Asian Development Bank (ADB) has completed the study "Operational Research to support mainstreaming of integrated flood management under climate change" with focus on community participation. Two pilot studies have been completed for Burhi Gandak basin in Bihar and Brahmani-Baitarani basin in Odisha. The project reports have been sent to State Governments for implementation.

Under the HRD and Capacity Building component of National Water Mission, various trainings, mass awareness programmes/conventions etc. have been carried out on water conservation, improving water use efficiency, participatory irrigation management, etc. during the XII Plan in association with WALMIs, research institutes and other organizations."

24. The Committee, in their Thirteenth Report, had recommended the Ministry to chalk out an action paln for achieving the goal of 800 new Hydrological Observation Stations (HOS) to be set up by the Central Water Commission (CWC) during the 12th Plan and also the target of 200 Automatic Satellite Based Telemetry Systems during 2016-17 as was planned by the Central Water Commission (CWC). However, the reply of the Government is conspicuously silent about initiatives for such an action plan being made by the Government. The Committee, therefore, reiterate their earlier recommendation that the Ministry works out an action plan in this regard so that the goal of 800 new HOS could be achieved by the CWC during 12th Plan itself and also that the target of 200 Automatic Satellite Based Telemetry Systems is achieved during 2016-17.The Committee further note that out of the total of 800 new Hydrological Observation Stations (HOS) targeted to be established by CWC in 12th Plan, 716 are in the final stage of installation and can start making observation with the support of additional manpower. The Committee recommend that the Ministry make earnest efforts for providing the required

manpower as projected by the CWC. They also desire that the Ministry may further seek information about the status of the two pilot studies, viz. Burhi-Gandak basin (Bihar) and Brahmani-Baitarani basin (Odisha) for which project reports have been sent to State Governments for implementation. The Committee would like to be informed of the progress of work pertaining to studies on impact on climate change on water resources for the 7 river basins viz. Mahanadi, Mahi, Luni, Tapi, Sabarmati, Subarnarekha and west flowing rivers from Tadri to Kanyakumari which have been awarded to Project implementing agencies.

H. National Water Mission and Efforts on increasing Water Use Efficiency

Recommendation (Para No. 16)

25. The Committee observed that in order to achieve the goal of "increasing water use efficiency by 20%", the National Water Mission has proposed to undertake proposals in water sector, namely irrigation, industry, domestic water supply and re-cycle and re-use of water, and six (6) demonstrative irrigation projects have been identified for preparation of Detailed Project Report (DPRs), which shall be undertaken after availability of additional funds, viz. Telangana (Kaddam Project), Maharashtra (Khekranala Project), Rajasthan (Indira Gandhi Nahar Project), Punjab (Kokri Distributory – Abohar Branch, Sirhind, Canal System), Haryana (Hissar Major Distributory sub-system of West Yamuna Canal System), and Madhya Pradesh(Chambal Canal Project). The Committee also noted that the NWM had requested the respective State Governments to notify the Nodal Officers for these projects, out of which two State Governments, i.e. Punjab and Rajasthan have done the nomination and the responses from

other States are awaited, after which the targets are to be fixed in consultation with the concerned State Governments. The Committee desired the Ministry to pursue with the State Governments of the remaining States, viz. Telangana, Maharashtra, Haryana, and Madhya Pradesh for ensuring expeditious steps in notifying Nodal Officers for the said demonstrative irrigation projects under NWM. They also strongly recommended that specific targets be fixed to achieve the goal of execution of demonstrative irrigation projects by all the concerned six States after holding necessary consultations with them. The Committee further noted that the draft proposal for the setting up of National Bureau of Water Use Efficiency(NBWUE) had been prepared in NWM and the proposal approved by the Minister, Water Resources, River Development and Ganga Rejuvenation was forwarded to the P:rime Minister Office(PMO) and Cabinet Secretariat in June 2016. However, the PMO has returned the proposal on 28.07.2016, with the remark to take3 appropriate action as a part of Integrated Water Management efforts. The Committee desired to see a clear-cut policy outcome regarding the Ministry's proposal to create NBWUE so that a national framework directives on water use efficiency may be framed at the earliest and issued by the Centre to all the States/UJTs in the near future. The Committee also noted that baseline studies of 21 major/medium water resources projects to assess the status of water use efficiency was initiated in March 2016 in the States of Assam, Manipur, Andhra Pradesh, Telangana and Maharashtra in association with Water and Land Management Institutes (WALMIS) and that NWM has awarded a study on establishing benchmarks for industrial use to assist policy for enhancing industrial water use efficiency in India to "The Energy and Research Institute,' New Delhi, which would focus on scoping exercise, preliminary baseline assessment of water and comprehensive water

audit/benchmarking in two industrial sectors, i.e. thermal power plants and textile industries. The Committee desired to Ministry to expedite completion of these studies and apprise them of the outcome, The Committee also liked to be informed of the progress made in this regard.

26. The Ministry, in its action taken note has replied as follows:

"The progress made so far in conducting Base Line studies is as under:

I. NERIWALAM- Tezpur (Assam): Draft Inception Report in respect of four baseline Studies (Pahumara Medium Irrigation Project, Loktak Irrigation Project, Kaliabor Lift Irrigation Project and Sukla Irrigation Project) have been received in NWM. The Draft Inception Reports were forwarded to Central Water Commission (CWC) for examination/comments. The observations offered on the reports have been forwarded to NERIWALM for needful action.

II. WALMTARI, Hyderabad (Telangana): Draft Inception Report of all the ten projects (Rallapdu Medium Irrigation Project, Torrigadda Medium Irrigation Project, Thadipudi Medium irrigation project, Vengalarasagaram Medium irrigation Project and Guntur Channel Medium Irrigation Project) are sent to CWC for examination/comments.

III. WALMI, Aurangabad (Maharashtra): Preparation of draft inception Reports are in progress.

- Regarding "Benchmarking industrial water use to assist policy for enhancing industrial water use efficiency (Thermal Power plants, Textile, Pulp & Paper and Steel Industry) in India" being undertaken by The Energy and Research Institute (TERI). In the **Phase I** of the study, we have completed scoping exercise and preliminary baseline assessment of all the 4 sectors viz. TPP, Textiles, Pulp & Paper and Steel.
- For Phase I, water audits have been completed in 6 industries out of 12 in total. TERI has recently completed water audit at Arvind Mills Limited, Gandhinagar and Mafatlal Industries Limited, Nadiad, Gujarat. Remaining 6 no. of water audits for phase I are planned during June - August 2017 in TPP & Textile sector."

27. The Committee note that baseline studies of 21 major / medium water resources Projects for assessing the status of water use efficiency was initiated in March, 2016 in the States of Assam, Manipur, Andhra Pradesh, Telangana and Maharashtra in association with the Water and Land Management Institutes (WALMIS) and that the National Water Mission (NWM) has awarded a study on establishing the benchmarks for Industrial use to assist policy for enhancing industrial water use efficiency in India to

"The Energy and Research Institute", New Delhi. The Committee further note from the reply of the Ministry that Draft Inception Reports of 4 baseline studies, viz. Pahumara Medium Irrigation Project, Loktak Irrigation Project, Kaliabor Lift Irrigaiton project and Sukla Water Irrigation Project as received from the National Water Mission were forwarded to the Central Water Commission, whose observations have been further forwarded to the North Eastern Regional Institute of Water and Land Managemetn (NERIWALM) for needful action. Besides, while the Draft Incepiton Report of all the 10 projects are stated to be sent to CWC for examination / comment, only 5 such projects viz. Rallapadu Medium Irrigation Project, Torrigadda Medium Irrigation Project, Thadipudi Medium Irrigation Project, Vengalara Sagaram Medium Irrigation Project and Guntur Channel Medium Irrigation Project have been mentioned. The Committee would like to be informed of the details for all the 10 projects for which Draft Inception Reports have been sent to CWC for the comments by the Water and Land Management and Training and Institute. The Committee would also like to see a clear-cut policy outcome regarding the Ministry's proposal to create the National Bureau of Water Use Efficiency (NBWUE) for which the draft proposal has been prepared by the NWM. Additionally, the Committee are of the opinon that the Ministry should pursue with the concerned State Governments for notifying the Nodal Officers for 6 demonstrative Irrigation projects already identified for preparation of Detailed Project Reports (DPRs) which aim to achieve the goal of "increasing water use efficiency by 20%" under the National Water Mission viz. Telangana (Kaddam Project), Maharashtra (Khekranala Project), Rajasthan (Indira Gandhi Nahar Project), Punjab (Kokri Distributory – Abohar Branch, Sirhind

Canal system), Haryana (Hissar Major Distributory sub-system of West Yamuna Canal system), and Madhya Pradesh (Chambal Canal Project), by fixing specific targets to achieve the goal of execution of demonstrative irrigation projects by all these States after holding necessary consultations with them.

CHAPTER II

OBSERVATIONS / RECOMMENDATIONS WHICH HAVE BEEN ACCEPTED BY THE GOVERNMENT

Recommendation (Para No. 1)

The Committee note that the per capita live water storage in India is about 209 m^3 (cubic meters) based on population of 2011 census, which is far below 1000 cubic meters, the minimum threshold for identifying water-scarcity condition of a locality, State or country. The Committee also note that as per the information provided by the Ministry of Water Resources, River Development and Ganga Rejuvenation, Russia and Australia can sustain consecutive droughts for about 4 and 3 years respectively. However, India cannot sustain drought beyond one non-Monsoon season due to low per capita storage, and as such, thus may face acute stress, if any year happen to be a drought year. Further, whereas the average water availability in the country remains more or less fixed according to the natural hydrologic cycle, the per capita availability is reducing progressively owing to increasing population, from 2209 cu. m. (cubic meter) per year in 1991 to about 1545 cu. m. Per year in 2011. The Committee note with concern that the country is steadily hurtling towards a great water crisis in the near future due to the prevailing near water-scarcity situation in the country as well as the regressive trend towards declining capita water availability, specially since 1991. The Committee, therefore, recommend that urgent, specific initiatives be made by the Government to increase the live per capita water storage as well as per capita water availability in India. In this connection, the Committee note the Ministry's observation that creation of storage-based water resources projects on appropriate sites can result in increased per capita live storage capacity without compromising the ecological balance in the country. The Committee therefore, strongly

recommend the Government to (i) compile information / data regarding the large and medium dams / reservoirs presently under implementation in the country separately, (ii) make a review of the status of their execution including the bottlenecks (if any) hampering the timely completion, and (iii) make a time-frame for completion of each of these large / medium dams or reservoirs. The Committee desire to be apprised of the initiative taken by the Government in this regard.

Reply of the Government

The per capita live water storage in India is about 209 m^3, based on population of 2011 census, which is far below 1000 cubic meters, the minimum threshold for identifying water-scarcity condition of a locality, state of a country. In this regard, it is to mention that the per capita live storage and per capita water availability (Falkenmark Water Stress Indicator) are two different things. The per capita availability of water in the country is 1545 cubic meters as per the 2011 census which is more than 1000 cubic meters. National Register of Large Dam (NRLD) is a compilation of the dams in the country prepared as per information received from the State Government/Authority concerned. The information which is sought cannot be derived from NRLD and additional work is required to be conducted. For timely completion of old projects efforts are being made to expedite old projects under PMKSY-AIBP programme of Government of India and several new projects are being initiated at the same time. 99 ongoing AIBP projects have been identified in consultation with the States for completion by Dec. 2019.

Comments of the Committee

(Please see Para No. 6 of Chapter-I of the Report)

Recommendation (Para No. 4)

The Committee observe that Drip and Sprinkler irrigation systems constitute the chief modern water conservation techniques in India. In Drip irrigation, water is delivered at the root zone of the crops through emitters like drippers, micro sprinklers, micro jets, misters, fan jets, micro sprayers, foggers, etc. This method has less water requirement resulting in water saving, higher fertilizer application efficiency, energy conservation, higher water use efficiency, and is feasible in different terrains and suitable for problematic soils and prevention of water logging. Sprinkler irrigation system requires energized pump sets, irrigate more uniformly than gravity systems, require much less maintenance when compared with conventional pressurized irrigation systems, eliminates seepage and evaporation losses, has no requirement of skilled manpower, no expensive land levelling, and is suitable for irrigation of crops with high density and particularly effective in sandy undulating terrains and widely used for cereals, pulses, seeds and other field crops. The Committee are happy to note that State Governments are encouraging adoption of these water saving techniques through provision of subsidies to farmers on purchase of these systems. The Committee further note that as per ;the 12th Plan guidelines of Command Area Development and Water Management (CAD&WM) programme, a minimum of 10% of Culturable Command Area (CCA) of each project is to be covered through micro irrigation and the Central Assistance to the tune of 50% is provided to the States for development of infrastructure to facilitate use of sprinkler / drip irrigation. The Committee also note that through 'fertigation' process in sprinkler / drip irrigation systems, more efficiency is achieved by combining fertiliser as well as water soluble fertilizers, thereby increasing fertilizer use efficiency from 80 to 90 per cent. Taking cognizance of the paramount need for

conservation of water in India through traditional as well as modern methods, the Committee desire that micro irrigation comprising Drip and Sprinkler irrigation techniques be taken up in the country as a popular movement with a great sense of urgency by both the Central and the State Governments and proactive action needs initiated by the Government in this regard. The Committee also recommend that apart from the provision of incentives provided through CAD&WM programme by the Government, the Ministry should also come up with novel initiatives to incentivise the States/UTs to adopt Sprinkler and Drip irrigation systems for achieving water use efficiency in agriculture and other allied sectors of the country without loss of further precious time, and also take steps to promote 'fertigation' across the country. They would further strongly recommend the Government to promote and propagate Drip and Sprinkler irrigation methods through the print and electronic media such as television, cinema, internet etc. so as to create necessary awareness among the farming community as well as general public. They would like to apprised of the progress made in this direction through the initiatives taken by the Ministry.

Reply of the Government

Looking to the vast potential under Micro-Irrigation, the Government of India set up a '*Task Force on Micro Irrigation'* in the year 2004, which assessed that the potential of coverage area under Micro-Irrigation was of the order of 69 Mha (27 Mha under drip irrigation and 42.5 Mha under sprinkler). The Task Force also suggested that the Planning Commission should make it obligatory for the project authorities to implement Micro-Irrigation in at least 10% of the Command Area while sanctioning new irrigation projects. Ministry of Water Resources, River Development and Ganga Rejuvenation is providing Central Assistance to States under

Command Area Development and Water Management Programme (CAD&WM) for development of infrastructure to facilitate use of drip/sprinkler irrigation system as an alternative to construction of field channels. The assistance under this item will be towards construction of stilling tank, pump house and laying of conveyance pipes up to farmer's field.

The Guidelines for Central Assistance for CAD works in prioritised AIBP Irrigation Projects including a coverage of 10% of CCA of each project for infrastructure cost of micro irrigation have already been circulated during January, 2017. The implementation of micro irrigation is proposed to be up-scaled to 30% of CCA of the projects under a new incentivization scheme for bridging the irrigation gap, which is under State level consultation after "in Principle" approval of Ministry of Finance. National Water Mission has organised about 70 training/ mass awareness programmes (about 14200 participants) for promoting efficient use of water in irrigation sector including water conservation .

Comments of the Committee

(Please see Para No. 15 of Chapter-I of the Report)

Recommendation (Para No. 5)

The Committee note that under the National Aquifer Management (NAQUIM) programme initiated since 2012, only an area of 5.5 lakh sq.km. has so far been mapped and 23 lakh sq. Km. Remain to be mapped, for which Rs. 3000 crore is needed. The reason for under-achievement in the implementation of NAQUIM programme, according to the Ministry, was delay in commencement of the programme due to late approval of the scheme in September, 2013. The Ministry also informed that NAQUIM programme has been taken up in 8.89 lakh sq. Km. During 12th Plan, focussing on ground water over-exploitation, water scarcity

in Bundelkhand and arsenic contamination and that out of 8.89 lakh sq. Km., and area of 5.25 lakh sq. Km. Has been re-prioritized in the water stressed areas of the States of Haryana, Punjab, Rajasthan, Gujarat, Andhra Pradesh, Telangana, Karnataka, Tamil Nadu, NCT Delhi and Bundelkhand region for aquifer mapping and preparation of aquifer-wise ground water management plans. The Committee have also been apprised that (i) review of the work done under NAQUIM programme is being carried out at CGWB through a two-tire evaluation mechanism, (ii) regular progress is being reviewed at Ministry-level including the weekly meeting taken by Minister of Water Resources, River Development and Ganga Rejuvenation, (iii) State Ground Water Coordination Committees (SGWCC) are geared up as per direction of National Inter-Departmental Steering Committee (NISC) for Aquifer Mapping and Management Programme, and (iv) workshops are being organised by CGWB involving Central / State Government departments, academic institutions, experts, etc. to have regular feedback on activities being carried under NAQUIM. Despite these tall claims, the Committee are disappointed that although a total outlay of Rs. 3319 crore has been made for 12th Plan (2012-2017) for the scheme of Ground Water Management and Regulation with Aquifer Mapping as one of the components, a total expenditure of only Rs. 146.48 crore has been made on Aquifer Mapping upto June, 2016. The Committee are convinced that special measures are desperately needed to ensure smooth progress in the implementation of NAQUIM programme in the country. Noting that the 12th Plan (2012-17) is soon coming to an end without commensurate achievements being made under NAQUIM IN THE COUNTRY, THE Committee desire that they be apprised of the physical and financial achievements made under NAQUIM in 5.25 lakh sq. Km. Re-prioritised, water-stressed areas till date. They also desire that effective

measures / methods be devised and put in place by the Government to ensure timely, optimum utilization of budgetary outlays made for Aquifer Mapping under the scheme of Ground Water Management and Regulation before the end of the 12th Plan period. Additionally, the issue of late approval of the National Aquifer Management (NAQUIM) programme be addressed on priority so that this problem at least do not plague its implementation during the ensuring 13th Plan, if the scheme is proposed to be carried over further. In the opinion of the Committee, the monitoring and evaluation works of the programme also needs to be intensified by the Government during 2017-18 in order to speed up its implementation and achieve targets-oriented results.

Reply of the Government

During implementation of Aquifer Mapping (NAQUIM), special measures have been undertaken to ensure smooth progress of NAQUIM. These measures include; regular appraisal/review of the activities under NAQUIM by National Inter-departmental Steering Committee (NISC), engagement of a reputed PSU as Project Management Consultant to streamline the outsourcing activities, evaluation of Aquifer maps and management plans being prepared by a National level expert committee and increased involvement of institutions of excellence like NGRI, GSI, NIH, BARC and NRSC for various inputs related to Aquifer Mapping.

The aforementioned steps in conjunction with advance planning made for various activities under NAQUIM to be taken up during coming years would ensure timely and optimum utilisation of the budgetary outlays made for Aquifer Mapping. In this regard, in-

principle approval of plan for NAQUIM in the coming years has been obtained from the Ministry and EFC for approval and continuation of the scheme is under finalization.

Intensification of monitoring and evaluation of Aquifer Mapping has been ensured by convening regular meetings of the NISC which has been constituted as the apex body for overall guidance for the implementation of the NAQUIM at National level under the Chairmanship of the Secretary, Ministry of Water Resources, RD&GR. The members of NISC include representatives from related Ministries like Science & Technology, Earth Sciences, Rural Development, Drinking Water & Sanitation etc as well as the Principal Secretaries of States. During last 6 months, in order to intensify the activities under Aquifer mapping and to speed up its implementation, two meetings of NISC have been held during September 2016 and March 2017.

As part of Aquifer mapping, a total of 5.90 lakh Sq Km area has been covered including areas pertaining to priority States such as Andhra Pradesh, Telengana, Tamil Nadu, Karnataka, Gujarat, Rajasthan, Punjab, Haryana and Bundelkhand region (covering parts of Uttar Pradesh and Madhya Pradesh) under the Ground Water Management and Regulation Scheme. An expenditure of Rs 581 Crores has been incurred against the RE allotment of Rs 742 Crores during the 12th Plan. The State wise achievements made under Aquifer Mapping is given as **Annexure II.**

Recommendation (Para No. 7)

According to the Minister of Water Resources, River Development and Ganga Rejuvenation, 'water budgeting' is an accounting of all the water utilized by the system that flows into and out of a project area. Based on the availability of water as per the rainfall data,

allocation of water to various sectors (Irrigation/agriculture/domestic/industrial) is made for the year specially for Rabi and Kharif crops. The Ministry also informed that proper water budgeting is helpful to conserve water from rainfall and surface run off to the extent possible in view of the erratic and highly variable duration and amount of Monsoon rainfall in different parts of the country. In this connection, the Committee note that the National Water Mission (NWM) has requested all the States / UTs to prepare State Specific Action Plan (SSAP) for water sector linking with State Action Plans for Climate Change, as a result of which six States, viz. Andhra Pradesh, Assam, Gujarat, West Bengal, Uttarakhand and Telangana have initiated their State Specific Action Plans in the first phase and other States are to follow. The Committee also note that State / UTs Governments have been asked to set up Water Regulatory Authorities to regulate the use of water and promote water conservation, and the Government of Maharashtra and Gujarat have established such Authorities in their respective States. Having fully convinced that 'water budgeting' is an efficacious technique for judicious and efficient use of water in the country, the Committee strongly recommend that appropriate guidelines be issued by the Government to all States/UTs, Central Institution/bodies and local bodies to promote and popularize the concept of 'water budgeting' all through the country, and necessary steps be immediately initiated by the Ministry in this direction under intimation to this Committee. The Committee also recommend that the Ministry vigorously pursue with all the remaining States/UTs to prepare State-Specific Action Plan (SSAP) for water sector by linking them with State Action Plans for Climate Change - in compliance with the goal of National Water Mission within a specified time-frame. Side by side, steps be taken by the Government to ensure that all the other remaining States/UTs duly set up Water Regulatory Authorities for

regulation of the use of water and also its conservation on the pattern already done in the States of Maharashtra and Gujarat and also targets to achieve thereby be set up by the Government for compliance by all the States/UTs. The Committee would like to be informed of further action taken in this regard.

Reply of the Government

District Irrigation Plans (DIPs) and State Irrigation Plan (SIP) shall be the cornerstone for planning and implementation of PMKSY. DIPs will present holistic irrigation development perspective of the district outlining medium to long term development plans integrating three components viz. water sources, distribution network and water use applications incorporating all usage of water like drinking & domestic use, irrigation and industry. Further, SIP will not only consolidate the DIPs and correlate with State Agriculture Plan (SAP) but also prioritize resources and outline definite annual action plan with a medium to long term horizon. DIPs and SIP will provide requisite emphasis on convergence by eliminating overlap of resources & efforts and ensuring optimal utilization of funds available through various Centrally Sponsored/State Plan Schemes. In addition under Jal Kranti Abhiyan, water security plans are being developed for every Jal Gram. Seminars/Training programs and workshops have been organized under IEC activities to create awareness amongst stakeholders.

For preparation of State Specific Action Plans for Water Sector, MoU has been signed with 12 States and funds have been released to 11 States through NERIWALM, Tezpur, Assam. NIH, Roorkee has also been declared as nodal agency for remaining 17 States and work is in progress. A National Level Orientation Workshop was held on 5th June, 2017 at New Delhi where in

participants from National Water Mission, various Central Ministries/Departments, State representatives along with their Nodal Officers, Experts/ Resource Persons from water sector attended the workshop in which draft Status Reports of 8 states were discussed in detail along with the observations of Central Government organisations and experts associated with preparation of SSAPs.

Recommendation (Para No. 8)

The Committee observe that for improving water conservation, the Central Water Commission (CWC) of Ministry of Water Resources, River Development and Ganga Rejuvenation had been keeping eye on performance overview and management improvement of Major and Medium Irrigation (MMI) projects of the country. It has so far appraised water use efficiency of 35 irrigation projects and 131 performance evaluation studies and the findings there from were conveyed to the respective project authorities' for taking up corrective measures. The CWC has also been encouraging water auditing and benchmarking of irrigation projects by publishing general guidelines for it for the States and also the Guidelines for improving water use efficiency in irrigation, domestic and industrial sectors. The Committee further note that under the 'Per Drop More Crop' component of the Prime Minister's Krishi Sinchai Yojana (PMKSY), promotion of efficient water conveyance and precision water application, installation of devices like drips, sprinklers, pivots and rain-gums in the farms is envisaged. The Committee are convinced that the time has come for the Government to adopt proactive steps to promote water use efficiency in the country, specially in the agricultural sector. They, therefore, recommend that additional Major and Medium Irrigation projects apart from the 35 irrigation projects already undertaken, may be taken up by the CWC for

performance appraisal and overview in regard to water use efficiency during 2017-18. Noting further that 131 performance evaluation studies and their findings pertaining to irrigation projects were already conveyed to the respective Project Authorities for taking up corrective measures, the Committee urge the Ministry not only to undertake and forward performance evaluation studies of Major and Minor Irrigation projects but also to endeavour to obtain relevant feedback from the concerned Project Authorities for perusal. The Committee are also fully convinced that with the general increasing trends towards water scarcity in the country in the present times, it is pertinent to think that the time has come for the country to go for bold initiatives toward the irrigation practices, and they, therefore, strongly recommend that the Ministry / Government institute a study on the viability of introducing piped-water supply to the fields – which will definitely reduce losses in water conveyance losses in canals, reduce water-logging and ensure water availability to tail-end farmers as well on a large-scale. The Committee further desire that performance evaluation (States/UTs-wise) regarding the physical and financial achievements under PMKSY till date be made by the Ministry / Government and the results achieved thereby be furnished to them at the earliest.

Reply of the Government

Out of 131 Performance Evaluation Studies (PES), 41 are pre-project evaluation studies, 44 PES were conducted by State Government. Rest 46 PES were undertaken by CWC and MOWR, RD&GR during VIIIth to XIth Five Year Plan through consultants like WALMIs, IMTIs, WAPCOS, Universities, etc. The final reports containing findings & recommendations were sent to the Project authorities of the concerned States and requested to provide feedback on implementation of findings & recommendations of PES of their Projects.

Reminders were also sent, but no response has so far been received from the project authorities. However, the concerned States are being re-approached for the feedback as also, impressing upon according higher priority to it.

99 ongoing AIBP projects have been identified in consultation with the States for completion by Dec. 2019. The Union Government has approved arrangement of funds both for Central Assistance and State Share from a long Term Irrigation Fund (LTIF) through NABARD. During 2016-17, Central Assistance of Rs.3307.9 crore was released to these prioritized projects under AIBP. Further, State share amounting to about Rs. 3334 crore was also released through NABARD for these prioritized projects. 21 projects having irrigation potential of 5.22 Lakh Ha., are expected to be complete by June, 2017. To reduce the wastage of water, parri passu implementation of CAD works in respect of these 99 ongoing projects is being done. Also, the states were emphasised to use piped water supply and coverage of command area by micro-irrigation system wherever feasible and this is one of the condition in the revised MoU being signed with the States in respect of 99 on-going AIBP projects under funding in PMKSY-AIBP. The performance evaluation of the CADWM component of 99 prioritized projects will be taken up on completion of the scheme. CWC has organised a Piped Irrigation Workshop at CWC, New Delhi (March, 2017) and have framed guidelines on “DESIGN OF PRESSURIZED PIPE IRRIGATION SYSTEM AND GUIDELINES FOR PLANNING AND DESIGN OF PIPED IRRIGATION NETWORK (SOURCE TO OUTLET)”.

Twenty Six Base line studies have been awarded to NERIWALM, Assam, WALMTARI, Hyderabad, WALMI, Aurangabad and CWRDM, Kazhikode to improve water use efficiency in

Medium and Major irrigation projects. Draft Inception Reports of 14 projects have been received from institutions and uploaded on NWM web site.

Recommendation (Para No. 9)

The Committee note the Ministry's observation that unless the water users / Water Users Association (WUAs) are sensitivized for efficient water use practices and rope in for water conservation, the on-ground improvement is a bit difficult, which thereby underlines the need to have lucrative incentivizing provisions to make them active stakeholders rather than the end users. The Committee fully concur with the view of the Ministry of this issue, and they strongly recommend that the Ministry bring out a Model Bill to be adopted by all States / UTs, which would provide legal framework for enactment of Participatory Irrigation Management (PIM) by them. The Committee also desire that the Ministry immediately enter into consultations with all the States / UTs for ensuring the enactment of PIM expeditiously in their respective territories providing for formation of a robust, efficient network of Water Users Association (WUAs) all over the country. The Committee 'would further like to be updated about the status of participatory' approach to management of water resources, i.e. enactment of PIM legislation and formation and functioning of WUAs in different States/UTs of the country. They also strongly recommend that a periodic monitoring and review mechanism on the working and performance of WUAs be worked out by the Ministry so as to eliminate the shortcomings noticed in their functioning, if any.

Reply of the Government

Ministry of Water Resources, River Development and Ganga Rejuvenation has been promoting Participatory Irrigation Management (PIM) in the country to enact new irrigation

acts/amending the existing irrigation acts for facilitating PIM so that the farmers are involved in maintenance of the created assets. Accordingly 16 States viz. Andhra Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Nagaland, Orissa, Rajasthan, Sikkim, Tamil Nadu and Uttar Pradesh have enacted legislation for involvement of farmers in irrigation management. The matter is being pursued with the State Government who have not yet enacted PIM Acts. The working and performance of WUAs will be monitored and strengthened through involvement of social facilitators as per provisions made in the Guidelines for central assistance under CADWM Programme. NWM, MoWR, RD & GR has initiated action to draft Model Bill on Participatory Irrigation Management (PIM) Act which is under finalisation stage.

Comments of the Committee

(Please see Para No. 18 of Chapter-I of the Report)

Recommendation (Para No. 10)

As per the Ministry of Water Resources, River Development and Ganga Rejuvenation, a minimum 10% of Cultural Command Area (CCA) of each project is to cover through micro irrigation under the 12th Plan guidelines. Further, Central Assistance (CA) to the tune of 50% is provided to the States for development of infrastructure to facilitate use of sprinkler/drip irrigation systems as an alternative to on-farm development works. Three schemes have been sanctioned in respect of micro irrigation works in 12th Plan, viz. Development of pressure irrigation in command area of six lift schemes of Indira Gandhi Nahar Pariyojana (IGNP), Stage-II, Rajasthan, Kandi Canal CAD&WM project, Punjab, and Kotla Branch, Part-II, Punjab. Whereas CA of a mere Rs.10.85 crore and Rs. 4.01 crore have been release in respect of six

lift irrigation schemes under IGNP, Staqge-II (Rajasthan) and Kotla Branch, Part-II(Punjab), no such release has been made for Kandi Canal CAD&WM project (Punjab) although 12th Plan is shortly coming to an end, which speak volumes about the casualness with which the execution of the CAD&WM projects/schemes are being done by the Government. The Committee, therefore, strongly recommend the Government to take immediate steps for release of the full amount of estimated Central Assistance for each of the three CAD&WM projects / schemes within this financial year (2017-18), viz. Six lift schemes of IGNP, Stage-II, Rajasthan (Rs.1658.80 crore) Kandi canal CAD&WM project, Punjab (Rs.73.44 crore) and Kotla Branch, Part-II project, Punjab (Rs.38.325 crore) and apprise them of action taken in this regard. The Committee also note that the Central Water Commission have undertaken 35 (thirty-five)studies to make a realistic assessment of water use efficiency for completed major / medium projects under Plan scheme of the Ministry, the recommendations / results of the study reports about interventions required / step to be taken up, have reportedly been sent to the concerned State Governments for taking necessary action. The Committee would like to know the specific follow-up action taken by the concerned States where such recommendations / results of study reports had been sent by the Government, and they also desire that the Ministry impress upon these State Governments to accord priority to taking the required remedial action for each of these projects. They would also desire the Ministry to take new initiatives with the States for improving water use efficiency in the form of guidelines / directives which would broadly include these measures, i.e. volumetric measured supply of water at field levels to be monitored by WUAs, levy of certain minimum water tariff to discourage wasteful water withdrawal from irrigation systems, enactment of PIM Act with empowerment of Water

Users' Association (WUAs), proper maintenance and management of surface water irrigation system so as to give an assured water supply for each field of the command area. The Committee would like to be apprised of action in this regard.

Reply of the Government

During 2015-16, Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) was launched with aims of enhancing physical access of water on farm and expanding cultivable area under assured irrigation, improving on-farm water use efficiency, introducing sustainable water conservation practices etc. and central assistance was released to development of Pressure Irrigation of Command Areas of 6 Lift schemes of IGNP Stage-II, Rajasthan and Kotla Brach Part-II, Punjab for micro-irrigation, as per physical and financial target proposed by the State Governments concerned. No central assistance could be released to Kandi Canal Project, Punjab during 2015-16 which did not submit proposal with physical and financial targets. CAD works have now been restricted to 99 priority AIBP projects for implementation under CADWM programme from 2016-17 onwards; and the development of Pressure Irrigation of Command Areas of 6 Lift schemes of IGNP Stage-II, Rajasthan, Kotla Branch Part-II and Kandi Canal Project, Punjab are not covered in the list of prioritized projects. The outstanding CADWM projects including the above mentioned projects are proposed to be covered under the new Incentivization Scheme for Bridging the Irrigation Gap. The suggested measures for improving water-use efficiency and for strengthening of Participatory Irrigation Management will also be included in the new proposed scheme. The final reports of 35 WUE Studies (now from 7 States) were sent with request to appraise the Ministry about the feedback on the action taken, based on the recommendations contained therein, of the respective WR Projects. None of the States

have responded, so far. However, the seven States are being re-approached for the feedback as also, impressed to accord high priority to it.

It is also to add that under new initiatives - Guideline for improving WUE in Irrigation, Domestic & Industrial Sectors – November, 2014 have been prepared and available at MoWR, RD & GR web portal.

Comments of the Committee

(Please see Para No. 21 of Chapter-I of the Report)

Recommendation (Para No. 11)

The Committee observe that the Ministry of Water Resources, River Development and Ganga Rejuvenation have initiated 'Climate Change, Impact Study on Eight River Basins' which would assess the impact of climate change on water resources specially on eight river basins on the country and global models are to be statistically and dynamically to be downscaled in the range of 30 years and 100 years from now, and assessing that can help in framing of plan for the conservation of water. Accordingly, study proposals have been invited from reputed academic institutions like IITs, NITs, IISc, NIH, etc. for eight river basins, viz. Mahanadi, Luni, Tapi, Satluj, Subarnarekha, Sabarmati, Mahi and areas of inland drainage, Tadri to kanyakuamri river basin. The duration of the studies would vary from 2 to 3 years. The Committee strongly feel that the threat to climate change is now considered as an established fact. The Committee are happy to note the Ministry's reply that research studies have been initiated on assessing impacts of climate change specially on water resources and on different adaptation and mitigation approaches, which would contribute to water sector in several ways, viz. (i) the regional climate scenarios will guide the policy makers for future planning, (ii) the

modeling results will provide estimate of the future water availability in the basin, and (iii)the model results might be used for assessing the effectiveness of the existing flood fighting structures and other infrastructures like bridges, weirs in the area under the flooding conditions, (iv) performance of reservoirs would be evaluated to assess the impact of climate change adaptation measures will be suggested, and (v) the adaptation strategies will help the local population to minimize the risk due to changing climate. The Committee urge the Ministry to tackle the issue of the impact of climate change on water conservation in the country with all seriousness, and they, therefore, recommend the Ministry to enlist support from not only the academic institutions but other NGOs/individual experts well-versed in the subject so that a pragmatic solution could be found to meet the adverse effects of climate change on water resources conservation. The Committee also urge the Ministry to get the studies on "climate change, impact study on Eight River Basins" and related research studies initiated by it and completed in a time-bound manner, which would serve as a catalyst for the Ministry to evolve measures aimed at holistic conservation of India's water resources. They desire to be informed of the action taken in respect of the above.

Reply of the Government

Ministry of Water Resources, River Development & Ganga Rejuvenation had approved 7 projects for various Research Organization. The details of projects approved along with the institutes through which these projects are going to be taken up are at **Annexure-III**. Funds for release of first installment is under active consideration in the Ministry. The studies are to be completed within three years. The reports of various studies initiated by the Ministry of Water Resources, River Development and Ganga Rejuvenation on climate change are uploaded on

website. Before finalization of such reports, they are also circulated to different Central/State Government organizations, experts and other stake holders for comments/observations. Any suitable inputs are incorporated in final reports and documents.

Recommendation (Para No. 13)

The Committee are informed that the village community in the three (3) districts of Satara, Jalna and Beed in Maharashtra had successfully adopted efficient irrigation practices, change in cropping pattern form sugfar to low water-consuming crops on the demand side and also adopted artificial recharge to enhance the yield of aquifer completing 116 recharge structures (55 in Satara, 30 in Jalna and 31 in Beed). The aquifer-based participatory ground water management pilot projects in these three districts was undertaken under Maharashtra Water Sector Improvement Project (MWSIP), aided by World Bank, and implemented in a total of 52 village of these districts within the tenure from 2005 to 2013 with the State Government playing a crucial role and initiating project activities with the mapping and delineation of the aquifer in the selected areas and then preparing the aquifer based water balance of the project area with community participation and with facilitation of a non-Government Organization (NGOs). The local community in each village was organized into Gram Panchayat Level Committee (GPLCs), having their own by-laws, whose Executive Committee were elected through democratic elections. All the GPLCs in the project pilot aquifer area after their formation, were federated into Ground Water Management Association (GWMA). The GPLCs and GWMA deliberated on current ground water situation and adopted appropriate intervention to improve ground water efficiency, reduce ground water extraction and arrest declining of water levels. The community manages aquifer with the help of NGO as per the Ground Water

Management Action Plan (GWMAP) under the technical supervision of District Technical Support Group composed of officers form various disciplines and Departments like water resources, water supply, agriculture and GSDa. Based on the capacity of the aquifer and availability of surplus runoff, the artificial recharge structures were finalized. The Committee are happy to know that the same aquifer based participatory ground water management is being replicated in 'Jal-swarajya' project (of Maharashtra Rural Water Supply and Sanitation Department) – Which is being implemented in 7 districts of the State, and that the same model is being propagated through the Maharashtra Ground Water (Development and Management) Act, 2009, which came into force w.e.f. 1st June 2014. The Committee have also been apprised of the successful implementation of ground water management by community participation / Gram Panchayat in Hiware Bazaar, Ahmednagar district, Maharashtra having a population of 1233(2011), which was achieved through water budgeting leading to change in cropping pattern and use of Drip/Sprinkler irrigation on the demand side and construction of rain water harvesting, e.g. earthen bunds, percolation tanks, stone bunds, check dams, trenches etc., afforestation and protection recharge zones, and revival of water bodies on the supply side. The Government of Maharashtra was involved in providing he needed infrastructure facility, capacity building, data generation for water budgeting. This data was used for participatory ground water management with active involvement of villagers as per the decisions of the Gram Sabha. The Committee are heartened to not that the initiatives under participatory ground water management at Hiware Bazaar, Ahmednagar, Maharashtra have greatly improved the socio-economic conditions of the village, and the village was declared an 'Ideal Village' by the Government of Maharashtra and, while during 1992, there were 168

families Below Poverty Line (BPL). But by 2008, there was not a single BPL family left. The Committee recommend the Government to earnestly explore the viability of replicating such models in the other remaining States/UTs so that concrete improvement are visible on ground water front in the near future, specially in those States/UTs facing ground water over-exploitation, water scarcity and arsenic / fluoride contamination – areas having serious ground water availability and quality issues. The Committee would like to be apprised of initiatives taken by the Government in this regard.

Reply of the Government

Extensive consultations were held with NGOs, Civil Society Organizations and Voluntary Organizations credited with successful initiatives of participatory ground water management from across the country including Maharashtra during the preparation of the proposal for National Ground Water Management Improvement Program (NGMIS). The best practices of such initiatives have been incorporated in the scheme proposal. Based on the efficacy of such interventions in the identified areas, MoWR, RD & GR will explore the possibility of taking up such initiatives in other States in future.

Recommendation (Para No. 15)

The Committee note that the National Convention of Water Users Associations (WUAs) was held at New Delhi in November, 2014 and three Regional conventions aimed at "promotion of citizen and state action for water conservation, augmentation and preservation" were organized at Ludhiana on 25-26th August, 2015, at Aurangabad on 8-9th January, 2016 and at Bengaluru on 24-25th September, 2016 respectively wherein several outcomes were noticed, viz. capacity building of representatives for WUAs on PIM water conservation and improving

water use efficiency, identification of problems faced by WUAs and recommendations made. The Committee desire that events be organized on a permanent basis on rotational basis in every region of the country in order to highlight the need for having a robust WUAs at State levels. The Committee also note that under MoU entered by the NWM with Tata Institute of Social Science (TISS), Mumbai, the NWM has circulated guidelines for organizing HRD Capacity building to the Central / State Government organizations like Water and Land Management Institute (WALMIS) in May, 2016 and 55 training / capacity building programmes have been organized in association with various organizations and about 4,420 persons trained during 2015-16 for various stakeholders, such as, Government officials / water users association / farmers and NGOs working in water sector. The Committee appreciate these initiatives of the Ministry, and they recommend that such training be organized for the elected representatives of the people at the village Panchayat level, such as Sarpanch, village ward members and also Corporators in urban local bodies as well, and necessary initiative be taken by the Ministry in this regard at the earliest.

Reply of the Government

National Water Mission is exploring the possibilities of organising the training programmes to elected representatives through various organisations like NERIWALM, NIRD &PR, WALAMTARI, WALMI (Aurangabad), CWPRS, CWRDM, ICAR-IIWM, HIRMI, NIH, IGNP and India NPIM. Aaction is initiated in this aspect collaboration with NIRD, Hyderabad during current Financial Year.

Recommendation (Para No. 16)

The Committee observe that in order to achieve the goal of "increasing water use efficiency by 20%", the National Water Mission has proposed to undertake proposals in water sector, namely irrigation, industry, domestic water supply and re-cycle and re-use of water, and six (6) demonstrative irrigation projects have been identified for preparation of Detailed Project Report (DPRs), which shall be undertaken after availability of additional funds, viz. Telangana (Kaddam Project), Maharashtra (Khekranala Project), Rajasthan (Indira Gandhi Nahar Project), Punjab (Kokri Distributory – Abohar Branch, Sirhind, Canal System), Haryana (Hissar Major Distributory sub-system of West Yamuna Canal System), and Madhya Pradesh(Chambal Canal Project). The committee also note that the NWM had requested the respective State Governments to notify the Nodal Officers for these projects, out of which two State Governments, i.e. Punjab and Rajasthan have done the nomination and the responses from other States are awaited, after which the targets are to be fixed in consultation with the concerned State Governments. The Committee desire the Ministry to pursue with the State Governments of the remaining States, viz. Telangana, Maharashtra, Haryana, and Madhya Pradesh for ensuring expeditious steps in notifying Nodal Officers for the said demonstrative irrigation projects under NWM. They also strongly recommend that specific targets be fixed to achieve the goal of execution of demonstrative irrigation projects by all the concerned six States after holding necessary consultations with them. The Committee further note that the draft proposal for the setting up of National Bureau of Water Use Efficiency(NBWUE) had been prepared in NWM and the proposal approved by the Minister, Water Resources, River Development and Ganga Rejuvenation was forwarded to the P:rime Minister Office(PMO) and Cabinet Secretariat in June 2016. However, the PMO has returned the proposal on

28.07.2016, with the remark to take3 appropriate action as a part of Integrated Water Management efforts. The Committee desire to see a clear-cut policy outcome regarding the Ministry's proposal to create NBWUE so that a national framework directives on water use efficiency may be framed at the earliest and issued by the Centre to all the States/UJTs in the near future. The Committee also note that baseline studies of 21 major/medium water resources projects to assess the status of water use efficiency was initiated in March 2016 in the States of Assam, Manipur, Andhra Pradesh, Telangana and Maharashtra in association with Water and Land Management Institutes (WALMIS) and that NWM has awarded a study on establishing benchmarks for industrial use to assist policy for enhancing industrial water use efficiency in India to "The Energy and Research Institute,' New Delhi, which would focus on scoping exercise, preliminary baseline assessment of water and comprehensive water audit/benchmarking in two industrial sectors, i.e. thermal power plants and textile industries. The Committee desire to Ministry to expedite completion of these studies and apprise them of the outcome, The Committee would, however, also like to be informed of the progress made in this regard.

Reply of the Government

The progress made so far in conducting Base Line studies is as under:

I. NERIWALAM- Tezpur (Assam): Draft Inception Report in respect of four baseline Studies (Pahumara Medium Irrigation Project, Loktak Irrigation Project, Kaliabor Lift Irrigation Project and Sukla Irrigation Project) have been received in NWM. The Draft Inception Reports were forwarded to Central Water Commission (CWC) for

examination/comments. The observations offered on the reports have been forwarded to NERIWALM for needful action.

II. WALMTARI, Hyderabad (Telangana): Draft Inception Report of all the ten projects (Rallapdu Medium Irrigation Project, Torrigadda Medium Irrigation Project, Thadipudi Medium irrigation project, Vengalarasagaram Medium irrigation Project and Guntur Channel Medium Irrigation Project) are sent to CWC for examination/comments.

III. WALMI, Aurangabad (Maharashtra): Preparation of draft inception Reports are in progress.

- Regarding "Benchmarking industrial water use to assist policy for enhancing industrial water use efficiency (Thermal Power plants, Textile, Pulp & Paper and Steel Industry) in India" being undertaken by The Energy and Research Institute (TERI). In the **Phase I** of the study, we have completed scoping exercise and preliminary baseline assessment of all the 4 sectors viz. TPP, Textiles, Pulp & Paper and Steel.
- For Phase I, water audits have been completed in 6 industries out of 12 in total. TERI has recently completed water audit at Arvind Mills Limited, Gandhinagar and Mafatlal Industries Limited, Nadiad, Gujarat. Remaining 6 no. of water audits for phase I are planned during June - August 2017 in TPP & Textile sector.

Comments of the Committee

(Please see Para No. 27 of Chapter-I of the Report)

CHAPTER III

OBSERVATIONS / RECOMMENDATIONS WHICH THE COMMITTEE DO NOT DESIRE TO PURSUE IN VIEW OF THE GOVERNMENT'S REPLIES

NIL

CHAPTER IV

OBSERVATIONS / RECOMMENDATIONS IN RESPECT OF WHICH REPLIES OF THE GOVERNMENT HAVE NOT BEEN ACCEPTED BY THE COMMITTEE

Recommendation (Para No. 2)

The Committee note that in certain areas of India, there has been (i) increase in pumping depths, drastic reduction in wells / tube wells yields and enormous rise in the cost of pumping ground water, (ii) widespread and acute scarcity of ground water in summer months for irrigation and drinking uses, and (iii) increase in fluoride content in certain areas and increase in salinity in the coastal areas. As per data compiled by Central Ground Water Authority (CGWA), there are 90% blocks in Punjab where ground water have been extracted and also that 'Water' being a State subject, 100% subsidy on power in Punjab is being provided to the Agriculture Sector, despite the fact that the Kirit Parikh Committee Report (2010) had suggested that water should not be treated as such – being a common resources. The Committee are further to note that perturbed that in Punjab, out of 138 assessment units, 110 have been classified as 'Over-exploited', 4 'Critical', 2 'Semi-Critical' and 22 'safe' as per the Ground Water Resource Estimate Report, 2011, one of the major reasons for which is being attributed to shifting to water intensive crop in the State, which has resulted in depletion of ground water table in many parts due to over-exploitation, imposing financial burden on farmers – who need to deepen their wells and replace their pump sets and on State Government – whose subsidy burden for electricity supply increase due to the provision of free electricity in the State for agricultural connections. The Committee are convinced that a major factor responsible for the scenario has been the absence of a clear-cut policy on ground water

extraction till now. The Committee, Therefore, reiterate the recommendation (no. 6) contained in their 5the Report (16th Lok Sabha on 'Review of Ground Water Scenario, need for a comprehensive policy and measure to address problems in the country with particular reference to (i)) Dark Blocks; and (ii) Contamination of underground water by certain industries' viz. That the Government should come out with a well-defined policy on ground water extraction. The practice of free supply of electricity to farmers for extraction of ground water be regulated with proper accountability by the States. The Committee of the considered view that an expert panel needs to be set up by the Government for making a scientific study of the impact of excessive withdrawal of ground water due to paddy cultivation in the State of Punjab – which should also suggest remedial measures to address the issue of wasteful draft of water for agriculture in the entire country. The Committee would like to be apprised of action taken in this regard.

Reply of the Government

National Aquifer Mapping and Management Programme is also addressing the issue of withdrawal of groundwater for irrigation including Punjab State. The management strategies are discussed before the National Level Expert Committee for National Aquifer Mapping in which an eminent agriculture expert is also a Member.

Ministry of Water Resources, River Development & Ganga Rejuvenation has constituted an Inter-Ministerial committee on 'Sustainable Withdrawal and effective Utilization of Ground Water and its Management' under the Chairmanship of Secretary, MoWR, RD & GR to look into the various challenges being faced in sustainable management of ground water resources. The Office Order of the Committee along with the Terms of Reference is enclosed

as **Annexure I.** Besides, the integration of roles performed by different Ministries while handling issues related to water is also being discussed by Niti Aayog.

Comments of the Committee

(Please see Para No. 9 of Chapter-I of the Report)

Recommendation (Para No. 3)

The Committee observe from the information provided by the Ministry that India had a rich tradition of water harvesting, which is more than two millennia old, viz. The Kuhals of Jammu, Kulsi of Himachal Pradesh, Guls of Uttarakhand, Pat of Maharastra, Zings of Ladakh, Zabos of Nagaland, Eris of Tamil Nadu, Keres of Karnataka, Tankas / Kundis / Bawdis/ Jhalaras, etc. of Rajasthan. Sadly, however, these age-old traditional rain-harvesting systems have fallen into disuse with the introduction of piped water supply system. In these connection, the Committee, further note that when the information pertaining the status of indigenous water harvesting methods/practices in India including their contribution to water resources conservation and management was south, the Ministry have replied that about 6 lakh tanks/ storages in India are used for minor irrigation (MI) schemes as per 4th Minor Irrigation Census, out of which 5 lakh are in use at present. The Committee also categorically desired to know whether any study has been made so far regarding the efficacy, merits, viability or sustainability of traditional water recharge/ harvesting techniques and also to state the efforts made by the Government to preserve, improve and develop the indigenous water recharge / harvesting methods in India. To this query, however, the Ministry have not furnished the relevant reply but have merely cited the various objectives of the scheme or Repair, Renovation and Restoration (RRR) of Water Bodies being implemented by the Government of India since the 10th Plan. The

Committee deplore the cavalier attitude of the Ministry, and they recommend that the Ministry immediately take steps to institute a panel of experts, professionals drawn from various reputed institutions in the country for undertaking a study on the efficacy, merits, viability or sustainability of traditional water recharge /harvesting techniques in India as existing now and apprise the Committee of the findings of their study. The Committee also desire that the Ministry hold consultations with various State / UTs with a view to devise ways and means to preserve, improve and develop indigenous water recharge / harvesting methods in the country that have fallen into disuse for various reasons. The Committee would like to be updated about action taken in this matter.

Reply of the Government

In order to preserve and improve the water storing capacity of water bodies, based on NRSC data, Unique Identity (UID) for all the water bodies has been generated under India-WRIS. The India-WRIS has generated information for 7,98,909 water bodies with the support of NRSC.

An Inter-sectoral Advisory Group (ISAG) was constituted in National Water Mission to advice and review the progress made in respect of Goal-III which is "Focussed Attention to Vulnerable Areas including Over-exploited Areas". The Group is headed by Chairman, Central Ground Water Board with members from Central Water Commission, Ministry of Rural Development, Ministry of Panchayati Raj, Ministry of Agriculture and Farmers Welfare, Ministry of Drinking Water and Sanitation, Ministry of Environment, Forests and Climate Change and Principal Secretaries of Water Resources of four State Governments. One of the important objectives of this Group is promotion of traditional system of water conservation and to take up

matters related to timely release of funds for completion of backlog RRR projects with Ministry. ISAG is pursuing the **convergence** programme for ground water recharge with MNREGA, Watershed Development Programmes, NWM and CGWB. This committee also recommended that the monitoring mechanism for ground water recharge will be through Principal Secretary (Water Resources/Irrigation/Rural Development Department) of the State.

Comments of the Committee

(Please see Para No. 12 of Chapter-I of the Report)

Recommendation (Para No. 12)

The Committee note the Ministry's reply that change of cropping pattern by farmers, specially from less water demand crops to high water demands crops such as sugar cane and paddy induces failure of the designed irrigation system to irrigate the entire command area, resulting in the tail-end farmers being deprived of irrigation water. Hence, it is necessary to enforce the proposed cropping pattern in the project area for effective management of water so that each field in command could get adequate water. The Committee also note that State Governments are encouraging adoption of water-saving technologies, such as sprinkler and drip irrigation system, through provision of subsidies to the farmers on the purchase of these systems, which are also recommended for achieving higher irrigation efficiencies and could be used for very small-sized holdings. However, the adoption of these technologies by poor farmers would depend heavily on the supply of information, material and service for installation. In this connection, the committee note that para 6.5 of the National Water Policy, 2012 contains provision which stresses water saving in irrigation use, viz. "water saving in irrigation use States in of paramount importance. Methods like aligning cropping pattern with natural

resources endowments, micro irrigation (drip, sprinkler etc.) automated irrigation operation, evaporation – transpiration reduction, etc., should be encouraged and incentivized." Keeping in view the fact that the bulk of farmers in India are poor who may not be in a position to avail of the tools for water-saving technologies, the Committee desire the Ministry to devise innovative steps to incentivize the farmers for adoption of these water-saving technologies in a big way, and also to explore avenues for encouraging farmers to stick to the agreed cropping pattern for effective water management so that each field in the command area including tail-end farmers get adequate water supply throughout the year. Assuming further that adequate finances may not be available either with the State/UTs or farmers, the committee also recommend the Government to encourage private sector participation in agriculture and water resources sector specially in the micro irrigation. The Committee also desire the Ministry to make a study on the impact of cropping pattern on water conservation in the country with the help of individual experts / professionals and research institutes under the Government for identifying the shortcomings noticed and advising solution so that the results of such a study may be disseminated to the States/UTs, farmers, water users, etc. for their benefits. The Committee would like to be informed about the action taken in this regard.

Reply of the Government

99 ongoing AIBP projects have been identified in consultation with the States for completion by Dec. 2019. The Union Government has approved arrangement of funds both for Central Assistance and State Share from a long Term Irrigation Fund (LTIF) through NABARD. During 2016-17, Central Assistance of Rs.3307.9 crore was released to these prioritized projects under AIBP. Further, State share amounting to about Rs. 3334 crore was also

released through NABARD for these prioritized projects. 21 projects having irrigation potential of 5.22 Lakh Ha., are expected to be complete by June, 2017. To reduce the wastage of water, parri passu implementation of CAD works in respect of these 99 ongoing projects is being done. Also, the states are emphasised to use piped water supply and coverage of command area by micro-irrigation system wherever feasible and this is one of the condition in the revised MoU being signed with the States in respect of 99 on-going AIBP projects under funding in PMKSY-AIBP.

Comments of the Committee

(Please see Para No. 21 of Chapter-I of the Report)

Recommendation (Para No. 14)

The Committee observe that to achieve the goal for "comprehensive water data base in public domain and assessment of the impact of climate change on water resources" 878 Hydrological Observation Stations (HOS) have been established in different basins, and 800 new HOS have been target to be established by Central Water Commission(CWC) in 12th Plan. The Committee also note that CWC has a target of 200 Automatic satellite-based telemetry system for financial year 2016-17 for hydrological network, real time information, improved water resources assessment, planning and flood forecasting, out of which 57 telemetry systems have been achieved upto December, 2016. Besides, the Committee have been informed that studies of impact of climate change on water resources for seven river basins (Mahanadi, Mahi, Luni, Tapi, Sabarmati, Subarnarekha and west flowing rivers from Tadri to Kanyakumari) in association with research institutes like IITs, IISc and NIH have been approved, and work on a study on statistical downscaling of global climate models for the river

basins (approved in 2016) has been awarded. The Committee desire that the Ministry chalk out action plan for achieving the goal of 800 new hydrological stations to be set up by CWC during 12th plan and also the target of 200 Automatic satellite based telemetry system during 2016-17 as planned by CWC. Further, progress of work pertaining to studies on impact on climate change on water resources for the said seven river system for which work has been awarded to the project implementing agencies, may also be constantly monitored by the Ministry and apprised to the Committee. In addition, the Committee also note that, NWM in association with the Asian Development Bank (ADB) has completed the study "Operational Research to support mainstreaming of integrated flood management under climate change" with focus on community participation, and two pilot studies have been completed for Burhi Gandak basin in Bihar and Brahmani Baitarani basin in Odisha for which the project reports have been sent to State Government for taking necessary action / implementation. The Committee would like the Ministry to keep tab on the matter so that a tangible outcome emerges from these two pilot studies and an awareness on the impact of climate change on water resources related issues is created in the country as a whole.

Reply of the Government

a) There is a provision to install 629 telemetry systems at existing ad newly proposed stations under the approved SFC memo for the scheme "Flood Forecasting". Out of this, 65 stations have been installed so far during XII Plan. The sites have been rationalised based on the requirement of Rainfall based Hydrodynamic Flood Forecasting Models being developed for various basins. Based on this rationalisation, tenders have been floated for 458 Stations

and work has been awarded during March, 2017 under different river basins organisations of Central Water Commission. The same are under process of installation.

b) Out of the total 800 new hydrological observations sites proposed, 716 are in final stage of installation and can start observation with support of additional manpower.

Asian Development Bank (ADB) has completed the study "Operational Research to support mainstreaming of integrated flood management under climate change" with focus on community participation. Two pilot studies have been completed for Burhi Gandak basin in Bihar and Brahmani-Baitarani basin in Odisha. The project reports have been sent to State Governments for implementation.

Under the HRD and Capacity Building component of National Water Mission, various trainings, mass awareness programmes/conventions etc. have been carried out on water conservation, improving water use efficiency, participatory irrigation management, etc. during the XII Plan in association with WALMIs, research institutes and other organizations.

Comments of the Committee

(Please see Para No. 24 of Chapter-I of the Report)

CHAPTER V

OBSERVATIONS / RECOMMENDATIONS IN RESPECT OF WHICH FINAL REPLIES OF THE GOVERNMENT ARE STILL AWAITED

Recommendation (Para No. 6)

The Committee observe that a Central sector scheme called 'Ground water Improvement Programme' is proposed to be launched shortly by the Government with budgetary support from the Central Government and loan from the World Bank in the ration of 50:50. Subject to approval by the Ministry of Finance and the Union Cabinet, the scheme is to be of six years duration, and would have inherent linkages with National Hydrology Project (NHP) and National Aquifer Management (NAQUIM) programme. Initially, five States, viz. Rajasthan, Haryana, Maharashtra, Gujarat and Karnataka, having some of the most heavily exploited ground water areas in India confronting serious water availability and quality issues, have been selected for inclusion in the Scheme, which also has provision for social audit and third party verification. Give the serious ground water scenario prevailing in the country, the Committee recommend the Government to ensure that the Ground Water Improvement Programme' as proposed is launched in the aforesaid six States of the country without further delay by obtaining necessary approval/ clearance for it from the Ministry of Finance and Union Cabinet. The Committee also desire the Government to ensure that the modalities of implementation, detailed model of funding, approval of the specific projects to be included under the Programme, monitoring and evaluation system of the scheme be worked out at the earliest and be forwarded to the States for eliciting their responses. Additionally, the Committee also recommend that apart from these six States, the Ministry should explore ways and means

to include the other remaining States in 'Ground Water Improvement Programme' in due course. The Committee desire to be apprised of progress made in the matter, after the presentation of this Report to the House.

Reply of the Government

The program is proposed to be taken up in identified over-exploited/critical/water-scarce blocks of seven States viz. Haryana, Rajasthan, Uttar Pradesh (Bundelkhand & Western U.P), Madhya Pradesh (Bundelkhand Region), Gujarat, Maharashtra & Karnataka States. The Department of Expenditure, Ministry of Finance has raised certain queries, which are being replied to.

Depending upon the efficacy of the project, MoWR, RD & GR will explore the possibility of up-scaling the scheme to other States/ UTs as recommended by the Committee.

NEW DELHI;
4 August, 2017
13 Shravana, 1939 (Saka)

HUKUM SINGH
Chairperson,
Standing Committee on Water Resources

ANNEXURE – I

No. T-40017/1/2017-GW -2322

Government of India

Ministry of Water Resources, River Development & Ganga Rejuvenation

****

Shram Shakti Bhawan, New Delhi
Dated: 10th March, 2017

ORDER

Subject:- Committee on Sustainable Withdrawal and effective utilization of Ground Water and its Management – Reg.

Ground Water which supports 65% of irrigated areas, 85% of rural drinking water, 50% of urban drinking water and contributes estimatedly 9% of GDP and has been the backbone of green revolution for the last 4 decades, is depleting at alarming rate on account of unsustainable withdrawal. This will seriously impact the Indian economy in the coming days.

2 In order to ensure sustainable withdrawal and effective utilization of ground water and its management, a Committee is constituted with the following members:

1.	Dr Amarjit Singh, Secretary (WR,RD&GR)	Convener
2.	Secretary, M/O Rural Development	Member
3.	Secretary, M/O Drinking Water & Sanitation	Member
4.	Secretary, M/O Panchayati Raj	Member
5.	Secretary, M/O Agriculture & Farmers Welfare	Member
6.	Secretary, M/O Environment, Forest & Climate Change	Member
7.	Shri Dipankar Saha, Member CGWB	Member Secretary

3. Terms of Reference of the committee are as below:

a) Arrangements for recharge of ground water for which to suggest effective integration of various national and state level programmes;

b) Ways to early implement National Aquifer Mapping and involvement of State officials and briefing to political leaders of States;

c) Ways to preserve and protect natural recharge zones/areas like forest which supports rivers, Himalayan terai and bhabars, Araveli bhuds, Satpura bazadas etc, wetlands, marsh lands, floodplains, sacred groves etc;

d) Capacity building of panchayats to promote and undertake ground water recharge structures, ground water budgeting & accounting and change the cropping pattern, if required, as a community decision;

Contd...2/-

e) To suggest network of institutions, civil societies which can undertake capacity building exercise of the panchayats;
f) To suggest norms for installing piezometers for different areas to help panchayats/villages to know ground water availability on a real time basis, given that withdrawal of ground water in India is highest in the world.
g) To suggest various measures to face water challenges for adaptation on account of perceptible climate change;
h) Suggest priority of ground water usage in the time of drought, prevention of its exploitation in certain areas like geological cracks, cavities etc in the hard rock areas so that they are reserved to met drinking water needs.
i) Suggest appropriate ground water regulation and procedure to be adopted by CGWA including the management and monitoring arrangement.
j) Suggest whether CGWA should be a separate entity outside CGWB and suggest distinct roles and responsibilities of CGWB and CGWA.
k) Suggest various measures including teaching in the schools/colleges for ground water conservation.
l) Suggest various measures for areas facing quality problems;
m) Suggest various measures for revival of springs as nearly 10% of population are dependent on springs for their water needs and that springs are rapidly drying.
n) Any other related issues.

4. The Committee will meet periodically and give a report in 3 months time, though may be extended, if necessity arises.

5. The Committee is free to invite experts who will be paid necessary TA/DA.

6. Secretarial and Logistics support would be provided by CGWB.

7. The Expenditure on account of TA/DA to official Members will be met from the source from which they draw their salaries. Non official Member(s) of the Committee will be paid TA/DA as applicable from the appropriate Head under the Scheme of Ground Water Management & Regulation operated by CGWB

8. The Constitution of the Committee has been concurred vide IFD Dy. No. 189/IFD/2017 dated 10.03.2017.

9. This issues with the approval of Hon'ble Minister (WR, RD & GR).

(Amit Kumar Singh)
Under Secretary to the Govt of India
Tel: 23766 907

Contd...3/-

To,

1. Secretary, Ministry of Rural Development, Krishi Bhawan, New Delhi
2. Secretary, Ministry of Drinking Water and Sanitation, Govt. of India, C Wing, 4th floor Paryavaran Bhawan, CGO Complex Lodhi Road, New Delhi – 110003
3. Secretary, Ministry of Panchayati Raj, Sardar Vallabh Bhai Patel Bhawan, Parliament Street, New Delhi
4. Secretary, Ministry of Agriculture and Farmers Welfare, Krishi Bhawan, Rajendra Prasad Road, New Delhi-110001
5. Secretary, Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhavan, Jorbagh Road, New Delhi
6. Shri Dipankar Saha, Member CGWB

Copy to:

1. Chairman, CGWB

Copy also to:

1. PS to Hon'ble Minister WR,RD&GR
2. Sr. PPS to Secretary, MoWR, RD&GR
3. PPS to JS(A&GW), MoWR, RD&GR
4. PPS to JS(PP)
5. PPS to JS&FA, MoWR, RD&GR
6. PPS to Dir(GW)

ANNEXURE – II

State-wise achievements made under NAQUIM programme

State/UT	Achievement (area in Km^2)
Andhra Pradesh	21175
Bihar	9086
Chhattisgarh	10619
Delhi	1483
Gujarat	31522
Haryana	44179
Jammu & Kashmir	3000
Jharkhand	17693
Karnataka	48311
Kerala	5200
Madhya Pradesh	32961
Maharashtra	30400
North Eastern States (Arunachal Pradesh, Assam, Meghalayaa, Manipur, Nagaland and Tripura)*	10855
Odisha	10193
Punjab	50368
Rajasthan	141963
Tamil Nadu	38942
Telangana	22328
Uttar Pradesh	45339
Uttarakhand	2811
West Bengal	8008
UT of Dadra and Nagar Haveli	490
Puducherry	293
Lakshadweep	32
Special Study Areas (covering parts of Bihar, Karnataka, Maharashtra, Rajasthan and Tamil	3006
TOTAL	**590287**

ANNEXURE – III

Projects Approved by MoWR, RD&GR

Sl.No.	Project No.	Name of the Project	Name of Institute
1.	RP-1	Impact Assessment of Climate Change on Hydro-meteorological processes and water resources of Mahanadi River Basin	IISc Bangalore
			IIT Bhubaneshwar
2.	RP-2	Climate Change Impact Studies for Rajasthan (Area of Inland Drainage and Mahi basin)	MNIT Jaipur
			CUJ Ajmer
			IIT Delhi
3.	RP -4	Impact of Climate Change on Water Resources of Tapi Basin	SVNIT Surat
			MNIT Jaipur
			MANIT Bhopal
4.	RP -6	Effect of Climate Change and land arse/land cover changes on spatial and temporal water availability in Subarnarekha Basin	IIT Kharagpur
5.	RP -7	Impact of Climate Change on Water Resources of Sabarmati Basin	IIT Gandhinagar
			SVNIT Surat
6.	RP -8	Impact of Climate Change on Water Resources in River Basins from Tadri to Kanyakumari	IIT Mumbai
			NIT Surakthal
			CWRDM Kozhikode
7.	RPD-1	Statistical Downscaling for hydro-climatic projections with CMIP5 Simulations to assess impact of Climate Change	IIT Mumbai
			IIT Guwahati
			IISc Bangalore
			IIT Gandhinagar
			IIT Kanpur

ANNEXURE – IV

List of Abbreviations

Cu.mt	Cubic Meters
NRLD	National Register of Large Dams
PMKSY	Prime Minister's Krishi Sinchayee Yojana
AIBP	Accelerated Irrigation Benefit Programme
CGWA	Central Ground Water Board
NRSC	National Remote Sensing Centre
UID	Unique Identity
ISAG	Inter Sectoral Advisory Group
MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
CAD & WM	Command Area Development and Water Management
CCA	Culturable Command Area
NAQUIM	National Aquifer Management Programme
SGWCC	State Ground Water Coordination Committee
NISC	National Inter-Departmental Steering Committee
SSAP	State Specific Action Plan
DIP	District Irrigation Plans
SIP	State Irrigation Plans
CWC	Central Water Commission
PES	Performance Evaluation Studies
WALMI	Water and Land Management Institute
IMTI	Irrigation Management Training Institutes
WAPCOS	Water and Power Consultancy Services
NABARD	National Bank for Agriculture and Rural Development
LTIF	Long Term Irrigation Fund
NERIWALM	North Eastern Regional Institute of Water and Land Management
WALAMTARI	Water and Land Management and Training and Research Institute
CWRDM	Centre for Water Resources Development and Management
WUA	Water Users Associations
PIM	Participatory Irrigation Management
CA	Central Assistance
IGNP	Indira Gandhi Nahar Pariyojana
NIH	National Institute of Hydrology
GPLC	Gram Panchayat Level Committee
GWMA	Ground Water Management Association
GWMAP	Ground Water Management Action Plan
BPL	Below Poverty Line
NGMIS	National Ground Water Management Improvement Programme
HOS	Hydrological Observation Stations
ADB	Asian Development Bank

TISS	Tata Institute of Social Sciences
ICAR-IIWM	Indian Council of Agricultural Research- International Institute of Water Management
HIRMI	Haryana Irrigation Management Institute
India NPIM	India National Participatory Irrigation Management
NWM	National Water Mission
NBWUE	National Bureau of Water Use Efficiency
TERI	The Energy and Research Institute

ANNEXURE - V

MINUTES OF THE TENTH SITTING OF THE STANDING COMMITTEE ON WATER RESOURCES (2016-17) HELD ON 8 AUGUST, 2017

The Committee sat from 1500 hours to 1515 hours in Committee Room No. 1, First Floor, Parliament House Annexe, Extension Building, New Delhi.

PRESENT

Shri Hukum Singh – Chairperson

MEMBERS

LOK SABHA

2. Shri Radheshyam Biswas
3. Shri B. Vinod Kumar
4. Shri Maganti Murali Mohan
5. Shri Sidhant Mohapatra
6. Shri Abhijit Mukherjee
7. Shri Sanjaykaka Ramchandra Patil
8. Smt. Aparupa Poddar
9. Shri Vishnu Dayal Ram
10. Shri Ram Prasad Sarmah
11. Shri Lallu Singh

RAJYA SABHA

12. Sardar Balwinder Singh Bhunder
13. Shri Harshvardhan Singh Dungarpur
14. Shri Ananda Bhaskar Rapolu
15. Shri Sanjay Seth
16. Shri Pradeep Tamta

SECRETARIAT

1.	Shri Shiv Kumar	-	Joint Secretary
2.	Smt. Rita Jailkhani	-	Director
3.	Shri Kushal Sarkar	-	Additional Director

2. At the outset, the Chairperson welcomed the Members to the sitting of the Committee. Thereafter, the Committee took up for consideration (a) Seventeenth Report on Action Taken by the Government on the Observations / Recommendations contained in the Sixteenth Report on Demands for Grants (2017-18) of Ministry of Water Resources, River Development and Ganga Rejuvenation; (ii) Eighteenth Report on Action Taken by the Government on the Observations / Recommendations contained in the Thirteenth Report on 'Indigenous and Modern forms of Water Conservation – Techniques and Practices'; and (iii) Nineteenth Report on 'The Inter-State River Water Disputes (Amendment) Bill, 2017'. After some deliberations, the Committee adopted the aforesaid three draft Reports without any modification.

3. The Committee also authorized the Chairperson to present the above three Reports to both the Houses of Parliament in the current Session.

The Committee then adjourned

ANNEXURE – VI

[Vide Para 4 of the Introduction]

ANALYSIS OF ACTION TAKEN BY THE GOVERNMENT ON THE OBSERVATIONS/ RECOMMENDATIONS CONTAINED IN THE THIRTEENTH REPORT (SIXTEENTH LOK SABHA) OF THE COMMITTEE

(i) Total number of Observations/ Recommendations 16

(ii) Observations/ Recommendations which have been accepted by the Government

Para Nos. 1, 4, 5, 7, 8, 9, 10, 11, 13, 15 and 16

Total : 11
Percentage : 68.75%

(iii) Observations/ Recommendations which the Committee do not desire to pursue in view of the Government's replies

Para Nos. NIL

Total : NIL
Percentage : 00.00 %

(iv) Observations/ Recommendations in respect of which replies of the Government have not been accepted by the Committee

Para Nos. 2, 3, 12 and 14

Total : 04
Percentage : 25.00 %

(v) Observations/ Recommendations in respect of which final reply of the Government are still awaited

Para No. 6

Total : 01
Percentage : 6.25%