Memorandum for Expenditure Finance Committee (EFC)
for
Scheme of Incentivization for Bridging the Gap Between Irrigation Potential Created (IPC) and Irrigation Potential Utilised (IPU), Increasing Water Use Efficiency and Providing Assured Supply of Water to Every Farm Field, and Transfer of 'Control and Management of Irrigation System' to Water Users' Associations

1. Scheme Outline

1.1 Title of the scheme:

Scheme of incentivization for: (i) bridging the gap between Irrigation Potential Created and Irrigation Potential Utilised; (ii) increasing water use efficiency in irrigation and providing assured supply of water to every farm field; and (iii) transfer of 'control and management of irrigation system' to Water Users' Associations.
Short title: ***'Incentivization Scheme for Bridging Irrigation Gap (ISBIG)***'

1.2 Sponsoring agency (Ministry/ Department/ Autonomous Body or undertaking):

Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India

1.3 Total Cost of the proposed Scheme

The total cost of the proposed Scheme is Rs.61,237 crore.

1.4 Proposed duration of the Scheme

The proposed duration of the scheme is 48 months (Four Years). Since the Scheme is tentatively scheduled to commence from 3rd Quarter of Financial Year 2017-18 (FY1), it will be spread over Five Financial Years and conclude in 2nd Quarter of 2021-22 (FY5).

1.5 Nature of Scheme: Central Sector Scheme/Centrally Sponsored Scheme

The proposed scheme is a Centrally Sponsored Scheme, with a Central component.

1.6 For Central Sector Schemes, sub-schemes/components, if any, may be mentioned. For Centrally Sponsored Schemes, central and state components, if any, may be mentioned.

The proposed Centrally Sponsored Scheme has Central and State components as below:

Central Component:	1. Oversight of the Scheme and overall supervision of different project components through Central Project Management Unit (CPMU) 2. Modernization/ extension of NERIWALM (North Eastern Regional Institute of Water & Land Management)
State Component:	Holistic implementation of all structural and non-structural components of the Scheme.

1.7 Whether a New or a Continuing Scheme? In case of a Continuing Scheme, whether the old scheme was evaluated and what were the main findings?

The proposed scheme is a New Scheme, evolved from the ongoing CADWM scheme which is in operation since 2004-05[1].

The new scheme has its genesis in the approval of the Cabinet for *'PMKSY – Establishment of Mission for completion of prioritized irrigation projects and funding arrangements'* wherein the approved Cabinet Note (CD-473/2016, dated 22.07.2016) states in its proposal (at Para 3.3.5) that *"CADWM works of all other projects are proposed to be funded through new scheme of incentivization for bridging the gap between IPC and IPU, the works under which shall also include system correction / renovation and modernization requirement of completed projects in addition to pressurized pipe system and use of sprinklers and Drip for their functioning at optimum level."* With the mentioned Cabinet approval, the ongoing CADWM scheme is restricted to 99 prioritized 'Accelerated Irrigation Benefit Programme (AIBP)' projects only; and the new scheme is for the balance outstanding projects.

1.8 Whether in-principle approval is required? If yes, has it been obtained?

While seeking Cabinet approval for the establishment of Mission for completion of prioritised projects and funding arrangements under PMKSY, the Cabinet was informed about the outline of the proposed (present) scheme through the Cabinet note. The now proposed scheme thus has its genesis in the Scheme of prioritized projects, which was approved in the meeting of the Cabinet on 27th July, 2016. The in-principle approval of the Department of Expenditure has also been received vide their letter F. No.10(02)/PF-II/2014 dated 20.03.2017.

1.9 Whether a Concept Paper or a Detailed Paper has been prepared and stakeholders consulted? In case new Centrally Sponsored Schemes, whether the State Governments have been consulted?

[1] *CADWM programme was restructured from an earlier scheme of CAD, which was in operation since 1974-75.*

Yes, a concept paper of the Scheme was prepared preliminarily targeting 185 projects in 24 States with outstanding Culturable Command Area (CCA) of about 56 lakh hectares as per initial information available in the Ministry. The Concept Paper was circulated on 16.12.2016 to all the States inviting suggestions for improvements and for finalisation of the projects and the targeted extent of outstanding CCA. After the receipt of in-principle approval of the DoE, the State level consultations were held during 5th to 17th April, 2017. As per proposals received from States and recommended by CWC Regional offices in the consultation meetings, the Scheme has been updated with revised targets of covering 317 irrigation projects in 24 States with outstanding CCA of 80 lakh hectares.

*The updated Concept Paper is given as **Appendix-C** to the Memorandum.*

1.10 Which existing schemes/sub-schemes are being dropped, merged or rationalised?

The existing Command Area Development and Water Management (CADWM) programme has been rationalised and restricted to the completion of CAD work in the 99 prioritized AIBP projects only. The new scheme is for the outstanding CADWM works of all other projects.

1.11 Is there an overlap with an existing schemes/sub-schemes? If so, how duplication of effort and wastage of resources are being avoided?

There is no overlap with any other scheme/sub-scheme in terms of targeted Projects or the targeted work components of the Project. The existing CADWM programme is restricted for completion of the CAD works of the 99 prioritized AIBP projects only, and the new scheme will not have any overlap with these prioritized projects.

1.12 In case of any umbrella scheme (program) give the details of schemes and sub-schemes under it along with proposed outlay component wise.

The ongoing CADWM scheme is under the umbrella scheme of 'PMKSY' with sub-scheme of 'Har Khet Ko Pani (HKKP)'. Under PMKSY-HKKP, there are four components – namely, (i) Surface minor irrigation, (ii) Command Area Development & Water Management, (iii) Ground Water Development, and (iv) Repair, Renovation & Restoration (RR&R) of water bodies – with combined allocation of Rs.9050 crore. Against the physical target of 15 lakh hectare set for CADWM works, about 5 lakh hectares has already been reported to be completed and CCA of about 72 lakh hectares is targeted for completion in the 99 prioritised AIBP projects.

Since the cost of the proposed scheme is much higher than the combined allocation of PMKSY-HKKP and since the target set for CADWM works under PMKSY-HKKP is also going to get exceeded by many folds, the new proposed scheme may be considered under the umbrella scheme of PMKSY-HKKP with suitable enhancement in its scope and financial outlay.

2. Outcomes and Deliverables

2.1 State aims and objectives of the Scheme

The scheme aims for:

(a) Completion of CADWM works along with correction of system deficiencies in canal network for bridging the gap between Irrigation Potential Created (IPC) and Irrigation Potential Utilised (IPU);

(b) Improving the water use efficiency in irrigation and providing assured supply of water to every farm field; and

(c) Transfer of control and management of irrigation system to the Water Users' Associations (WUAs).

The above aims will be achieved in about 317 existing water resources projects of 24 States. The CADWM works are targeted in about 80 lakh hectare of the balance Culturable Command Area [CCA] of these projects, while the correction of system deficiency will benefit their entire 178 lakh hectare of CCA as summarized in **Section 4.0** of the **Appendix-C**. *State-wise list of identified projects along with total/ outstanding CCA extent is given at **Annexure-I** of the **Appendix-C;** the list may undergo some changes at the time of Detailed Project Report (DPR) preparation and approval*.

The interventions targeted at improving the water use efficiency in irrigation and providing assured supply of water to every farm field will be project specific and assessed at the time of preparation of DPRs. However, the Scheme at the gross level aims for about 30% of the CCA to be covered under micro irrigation, of which 30% will be covered by solar powered system as well. In projects targeted for conventional On Farm development (OFD) works, about 30% of the targeted extent will also be developed for Conjunctive use of Groundwater. At the gross level of Scheme, about 10 projects are targeted for providing infrastructure for reuse of industrial/ municipal waste-water on pilot basis; and another 10 projects are targeted on pilot basis for canal automation seeking introduction of control and measurement for demand-side management of the irrigation water. *The targeted proportion/ numbers may undergo some changes at the time of Detailed Project Report (DPR) preparation and approval.*

Similarly, the exact numbers of WUAs involved under each project will be confirmed at the DPR stage; at present their numbers are estimated assuming one WUA per 500 hectares of CCA. Each WUA will be targeted for strengthening of participatory irrigation management (PIM); and the capacities of 'Water And Land Management Institutes (WALMIs)' will also be strengthened for deeper penetration of water education by way of WALMI's modernization/ extension/ creation.

The above three aims of the Scheme are covered by three separate activities, with an additional (fourth) activity focussing on Project Management. These

aims/ activities will be achieved by holistic implementation of scheme through 'Structural' and 'Non-structural' interventions (Scheme components) as presented in **Table-1** below:

Table-1: Structural & Non-structural Interventions (Scheme Components)

Aim/ Activity	Proposed Interventions/ Scheme Components			
Bridging of the IPC & IPU gap	i	a) Creation of field channel/ pipe network below the outlets of distribution network	On Farm Development Works	Structural Interventions
		b) Land levelling and realignment of field boundaries		
		c) Improvement in farm drainage system		
		d) Reclamation of waterlogged farm areas		
		e) Construction of farm roads *(by convergence through MGNREGA)*		
	ii	Correction of system deficiency in canal network		
Improving water use efficiency & providing assured supply of water	iii	Infrastructure for increased coverage of micro irrigation system		
	iv	Installation of solar power system for micro-irrigation		
	v	Infrastructure for conveyance and additional treatment of municipal and industrial waste water for augmenting water for the farm use		
	vi	Infrastructure for conjunctive use of groundwater		
	vii	Automation of canal system for control and measurement of irrigation supplies		
Transfer of control and management of irrigation system to WUAs	viii	Strengthening of Participatory Irrigation Management (PIM) for sustainable operation and maintenance of irrigation network		Non-structural Interventions
	ix	a) Modernization and extension of existing WALMIs/IMTIs	Water Education	
		b) Creation of new WALMIs in States where not in existence		
Project management	x	Creation of incremental establishment		
	xi	Capacity building of the PIAs & WUAs		

Brief descriptions of the above Structural and Non-structural interventions are given in **Section 5.0** of the **Appendix-C**.

2.2 Indicate year-wise outputs/deliverables in a tabular form.

Though there are multiple components, the Scheme broadly targets completion of CADWM activities in 80 lakh hectare (LHa) of the Culturable Command Area (CCA) in 48 months (i.e. four years) as per details given in **Table-2** below:

Table-2: Time Period for Completion of CADWM Activities

S.No.	Time Period	% Target	CCA Target (LHa)	Cumulative CCA (LHa)
1	01-12 months (Y1)	10%	8.0	8.0
2	13-24 months (Y2)	30%	24.0	32.0
3	25-36 months (Y3)	40%	32.0	64.0
4	37-48 months (Y4)	20%	16.0	80.0

Total:	100%	80.0	

Since the Scheme is scheduled to commence midway of a financial year (FY), it will be spread over five financial years as per schedule given in **Table-3**:

Table-3: Schedule of Completion of CADWM Activities

S.No.	Time Schedule	% Target	CCA Target (LHa)	Cumulative CCA (Lha)
1	Oct 2017 – Mar 2018 (FY1)	5%	4.0	4.0
2	Apr 2018 – Mar 2019 (FY2)	20%	16.0	20.0
3	Apr 2019 – Mar 2020 (FY3)	35%	28.0	48.0
4	Apr 2020 – Mar 2021 (FY4)	30%	24.0	72.0
5	Apr 2021 – Sep 2021 (FY2)	10%	8.0	80.0
	Total:	100%	80.0	

The schedule of overall physical outputs/ deliverables of the Scheme, in terms of Structural and Non-Structural scheme components, is presented in **Table-4**:

Table-4: Schedule of overall physical outputs/ deliverables

S.No.	Scheme Component	Unit	**Total**	FY1	FY2	FY3	FY4	FY5
i	On Farm Development (OFD) Works	Lha	**56.0**	2.8	11.2	19.6	16.8	5.6
ii	Correction of system deficiency (CSD)	Lha	**178.0**	8.9	35.6	62.3	53.4	17.8
iii	Infrastructure for micro irrigation	Lha	**24**	1.2	4.8	8.4	7.2	2.4
iv	Installation of solar power system	Lha	**7.2**	0.36	1.44	2.52	2.16	0.72
v	Pilot projects for reuse of waste water	No.	**10**	0	1	3	4	2
vi	Conjunctive use of groundwater	Lha	**16.8**	0.84	3.36	5.88	5.04	1.68
vii	Pilot projects for canal automation	No.	**10**	0	1	3	4	2
viii	Transfer of irrigation system to WUAs	No.	**16000**	800	3200	5600	4800	1600
ix(a)	Modernization/ extension of WALMIs	No.	**14**	0	1	4	6	3
ix(b)	Creation of new WALMIs	No.	**7**	0	0	3	3	1

2.3 Indicate Outcomes of the Scheme in the form of measurable indicators which can be used to evaluate the proposal periodically. Baseline data or survey against which such outcomes should be benchmarked should also be mentioned.

Key outcomes of the schemes in terms of measurable indicators are as below:

- Bridging of the IPC & IPU gap:
  - i On Farm Development Works — 56 Lakh hectare
  - ii Correction of system deficiency in canal network — 178 Lakh hectare
- Improving water use efficiency & providing assured supply of water:
  - iii Infrastructure for micro irrigation — 24 Lakh hectare
  - iv Installation of solar power system — 7.2 Lakh hectare
  - v Pilot projects for reuse of waste water — 10 Projects
  - vi Conjunctive use of groundwater — 16.8 Lakh hectare
  - vii Pilot projects for canal automation — 10 Projects
- Transfer of control and management of irrigation system to WUAs (PIM):
  - viii Transfer of irrigation system to WUAs — 16000 WUAs
  - ix(a) Modernization/ extension of WALMIs — 14 Nos.
  - ix(b) Creation of new WALMIs — 7 Nos.

Since Scheme targets only the outstanding CADWM works in the identified projects, the baseline data against measurable indicators presented above is presently taken as zero. However, the baseline data both in terms of quantity and quality will be assessed at the time of DPR preparation for each included project; and the same will also be incorporated in the MOUs to be signed with Project Implementing Agency (PIA) for the purpose of benchmarking and setting the outcome targets (with time schedules) for each such project.

2.4 Indicate other schemes/sub-schemes being undertaken by Ministries/Departments which have significant outcome overlap with the proposed scheme. What convergence framework has been evolved to consolidate outcomes and save public resources?

The scheme of 'On-Farm Water Management (OFWM)' of Department of Agriculture and Cooperation (DAC) of the Ministry of Agriculture and Farmers' Welfare (implemented under PMKSY-HKKP) has some overlapping component with the proposed scheme so far as the micro-irrigation through piped system is concerned. However, the overlapping of work is avoided by way of limiting the extent of pressurized piped system under this scheme up to the inlet point of each farm, whereas piped system of the OFWM scheme of DAC would start from such inlet points and extend over the individual farms. Some of the activities under MGNREGS may have overlap with the proposed scheme; and the component of Agriculture Livelihoods Support Services (ALSS) targeted at strengthening of Participatory Irrigation Management (PIM) may also see minor overlap with some other Central/ State Schemes. However, in all such cases the State Project Implementing Agencies will be required to ensure that under no circumstances shall there be any duplication or double counting of works.

The current coverage of micro-irrigation is stated to be only about 7.7 million hectare against the total potential of 69.5 million hectare estimated by the Govt. of India Task-force on Micro-irrigation (2004). In order to bridge this large gap, the Government of India has set up a dedicated fund in NABARD titled "Micro Irrigation Fund" (MIF) with initial corpus of Rs. 5000 crores to be utilized from the year 2017-18 onwards, with provision for redeployment of repayments received for the same purpose. Under ISBIG (operated by Ministry of Water Resources, RD &GR) the efforts will be directed at creation of the infrastructure for micro-irrigation which shall be "future ready" with minimum 2 kg/cm2 pressure at the farm outlet so that targeted farmer can adopt micro-irrigation by making investment on the drip/ sprinklers sets. Since the implementation of MIF is with the Ministry of Agriculture & Farmers Welfare (MoA&FW), convergence with MoA&FW will be required for enabling the targeted farmers in making requisite investment, thereby drawing immediate and full benefits of the Schemes operated by the two Ministries. The MoA&FW is being accordingly requested to carry out policy formulation, overall planning, and coordination in respect of utilization of MIF through a *DO Letter from Hon'ble Minister of Water Resources, RD &GR to the Hon'ble Minister of Agriculture & Farmers Welfare*.

During the State-level consultations on ISBIG, the need for inclusion of 'farm roads' as 'On Farm Development (OFD)' component was agreed subject to the condition that this component will be implemented through convergence with

the Scheme of MGNREGA (operated by MoRD) wherein construction of Gravel road/ WBM road is permitted. Accordingly, no separate cost provision has been kept for 'farm roads' under ISBIG proposal.

3. Target Beneficiaries

3.1 If the Scheme is specific to any location, area and segment of population. Please give the details and basis for selection.

The scheme is applicable for any existing water resources projects of India where CADWM works have not yet been completed. As such, the scheme is not specific to any location, area, or segment of population.

3.2 Please bring out specific interventions directed in favour of social groups, namely SC, ST, differently abled, minorities and other vulnerable groups.

Needful interventions in favour of social groups, namely SC, ST, differently-abled, minorities and others vulnerable groups will be put into effect at the time of empowerment of WUAs as per the previsions of Participatory Irrigation Management Acts, wherever in force, and the model (Draft) PIM ACT in other cases.

3.3 If the scheme has any gender balance aspects or components specifically directed at welfare of women, please bring them out clearly.

Aspects of gender balance and welfare of woman will be put into effect at the time of empowerment of WUAs as per the previsions of Participatory Irrigation Management Acts, wherever in force, and the model (Draft) PIM ACT in other cases.

3.4 Please bring out special interventions, if any, in North East, Himalayan, LWE, Island territories and other backward areas.

Special interventions in terms of increased Central share have been proposed in respect of projects in North Eastern States and Himalayan States as per provisions with-respect-to '*Pradhan Mantri Krishi Sinchai Yojna*' contained in Department of Expenditure, Ministry of Finance D.O. No.32/PSO/FS/2015 Dated 28/10/2015. Projects in special areas – i.e area under Drought Prone Area Programme (DPAP), Desert Development Programme (DDP), Left Wing Extremism (LWE), and tribal areas – are also being benefited by the Scheme, but are not given any special treatment in terms of central share allocation.

3.5 in case of beneficiary oriented schemes indicate the mechanism for identification of target beneficiaries and linkage with Aadhaar/UID numbers.

Most of the benefits (in term of direct financial assistance) are targeted at WUA levels. However, under the component of Agriculture Livelihoods Support Services (ALSS) targeted at strengthening of Participatory Irrigation Management (PIM) a nominal direct financial benefit may accrue to individual

beneficiaries as well; in all such cases the State Project Implementing Agencies will be required to link the benefit with Aadhaar / UID.

3.6 Wherever possible, the mode of delivery should involve the Panchayati Raj Institutions and Urban Local Bodies. Where this is intended, the preparedness and ability of the local bodies for executing the proposal may also be examined.

The project will be implemented through the Command Area Development Authority or the Irrigation/ Agriculture/ Public works/ Public health Departments of the State governments.

Wherever the mode of delivery through *Panchayati* Raj Institutions are already exiting and effectively functioning, the same will be leveraged in consultation with the State Governments.

4. Cost Analysis

4.1 Cost estimates for the scheme duration: both year-wise, component-wise segregated into non-recurring and recurring expenses.

The overall cost of the Scheme is estimated to be Rs. 61,237 crore for the duration of the Scheme**.** Year-wise and Component-wise (non-recurring/ recurring) segregation of the overall cost breakup is presented in **Table-5** below:

Table-5: Year-wise and Component-wise Segregation of Cost Estimate

(Financial Outlays in Rs. crore)

Sl. No.	Scheme Component	Financial outlays					
		FY1	FY2	FY3	FY4	FY5	Total
(I) NON-RECURRING							
i	OFD Works	980.00	3920.00	6860.00	5880.00	3279.90	20919.90
ii	CSD Works	654.50	2618.00	4581.50	3927.00	2190.50	13971.50
iii	Micro irrigation	600.00	2400.00	4200.00	3600.00	2008.00	12808.00
iv	Solar power system	180.00	720.00	1260.00	1080.00	602.40	3842.40
v	Reuse of waste water	100.00	400.00	700.00	600.00	334.70	2134.70
vi	Conjunctive use	75.60	302.40	529.20	453.60	253.00	1613.80
vii	Canal automation	25.00	100.00	175.00	150.00	83.70	533.70
viii	Transfer of sys. to WUAs	128.00	512.00	896.00	768.00	256.00	2560.00
ix(a)	Mod./ Ext. of WALMIs	35.00	140.00	245.00	210.00	70.00	700.00
ix(b)	Creation of WALMIs	35.00	140.00	245.00	210.00	70.00	700.00
	Sub-Total Non-recurring:	**2813.10**	**11252.40**	**19691.70**	**16878.60**	**9148.20**	**59784.00**
(II) NON-RECURRING							
x(a)	Inc. Est. in Centre	10.00	40.00	70.00	60.00	20.00	200.00
x(b)	Inc. Est. in States	56.25	225.00	393.75	337.50	112.50	1125.00
xi	Capacity building	6.40	25.60	44.80	38.40	12.80	128.00
	Sub-Total Recurring:	**72.65**	**290.60**	**508.55**	**435.90**	**145.30**	**1453.00**
	Grand Total:	**2885.75**	**11543.00**	**20200.25**	**17314.50**	**9293.50**	**61237.00**

The total cost of the Scheme is also divided in terms of 'State Component' and Central Component' costs categories, with State Component further divided as 'Special States' (namely, States of Himalayan region and North Eastern region) and 'General States'. The year-wise segregation of these cost categories is presented in **Table-6** below:

Table-6: Year-wise Cost for States & Central Component Categories

(Financial Outlays in Rs. crore)

Sl. No.	Cost Category	Financial outlays					
		FY1	FY2	FY3	FY4	FY5	Total
(I) State Component							
a	Special States	207.40	829.61	1451.81	1244.41	667.93	4401.16
b	General States	2666.19	10664.76	18663.33	15997.14	8586.41	56577.84
Sub-total of States:		2873.59	11494.37	20115.14	17241.55	9254.35	60979.00
(II) Central Component		12.16	48.63	85.11	72.95	39.15	258.00
Grand Total:		**2885.75**	**11543.00**	**20200.25**	**17314.50**	**9293.50**	**61237.00**

4.2 The basis of these cost estimates along with the reference dates for normative costing.

The cost estimate has been prepared keeping in view the prevalent guidelines of CADWM works as applicable for FY 2016-17. For new components, average cost norms have been prepared as per information gathered from the State Governments and NGOs/ Civil Societies engaged in similar activities. Thus arrived total base level cost of the Scheme at the beginning of the project is estimated to be Rs. 57,715 crore as detailed at Appendix-A. Cost escalation at an average annual inflation rate of 5% has been applied on the 'Structural Interventions' part of the base cost after 18 months (one-and-half years) of project commencement; and the project cost for full duration of the Scheme is estimated as Rs. 61,237 Crore as detailed at Appendix-B.

The break-up of the Scheme costs is presented in **Section 6.0** of the **Appendix-C, while further** details of 'Quantity' and 'Unit Rates' used in preparation of the cost estimates are summarized in **Annexure-II** and **Annexure-III** of the Appendix-C respectively.

4.3 In case pre-investment activities or pilot studies are being carried out, how much has been spent on these?

The proposal has drawn inputs form the learning curve built from the ongoing CADWM programme. This programme has been evaluated by 'Agricultural Finance Corporation Limited' in 2013, and the recommendations of the evaluation study have also been incorporated in the proposed scheme**.** As such, no other pre-investment activities or pilot studies have been carried out.

As agreed during the State level consultation process, States are expected to take up preparation of DPRs in advance, as per agreed timelines, in parallel with EFC/ Cabinet approval process; and the Consultancy cost (if any) for

preparation of DPRs shall be booked under State's Project Management component with retroactive effect.

4.4 **In case the scheme involves payout of subsidy, the year wise and component wise expected outgo may be indicated.**

The scheme does not involve payout of subsidy.

4.5 **In case the land is to be acquired the details of cost of land and cost of rehabilitation/resettlement, if any.**

The proposed scheme is directed at CADWM works for which land is generally made available by farmers free of cost. However, in some cases of micro-irrigation works, works of waste-water reuse, and extension/ creation of new WALMIs, limited land acquisition may get entailed. The extent of land acquisition requirement can be assessed only at the stage of DPR preparation of individual projects after the commencement of scheme. As such, the present scheme has not kept any cost provision for land acquisition and the requirement of extra land, including cost of acquisition (if any), shall have to be met entirely by the concerned State Government.

4.6 **In case committed liabilities are created, who will or has agreed to bear the legacy burden? In case assets are created, arrangements for their maintenance and upkeep?**

No committed liabilities are expected to be created under the proposed scheme. The assets of canal network below government outlets created under the scheme will be initially owned and operated by the Command Area Development Authority (CADA) or the concerned Department of the State. The Scheme also envisages creation and empowerment of Water Users' Associations (WUAs) to take over the control and maintenance of irrigation system. A project will be considered as complete only on transfer of 'control and management of irrigation system' to its WUAs. Hence, after the completion of this Scheme, the maintenance and upkeep of the created assets (CAD portion) will be carried out by the WUAs. All other assets created under the Scheme will be maintained by the concerned State governments.

5. Scheme Financing

5.1 Indicate the sources of finance for the Scheme: budgetary support, extra-budgetary sources, external aid, state share, etc.

In view of budgetary constraints, the financing of the new scheme is proposed through extra budgetary sources in the manner listed below:

(i) For the Central share, the funds will be borrowed from NABARD as per year-wise requirements, which could be paid back in 15 years time keeping a grace period of 3 years.

(ii) As was done in the case of 'Scheme of 99 prioritized AIBP projects', the borrowing shall pass through the National Water Development Agency (NWDA) – a society under MoWR,RD&GR, registered under the Society Registration Act 1860 – for channelizing the loan from the Long Term Irrigation Fund (LTIF) operated through the special window created in NABARD. The role of NWDA will be restricted to this single activity, and it will not entail creation of any extra staff in NWDA.

(iii) For the State share, the desirous States may also access the special window of NABARD in case of their inability to fund the project through own resources.

(iv) As was done in the case of 'Scheme of 99 prioritized AIBP projects', the additional equity for capitalization of NABARD for serving requisite borrowing from open market may be considered through Department of Financial Services budget line every year upto 2021-22 as per requirement.

(v) As was done in the case of 'Scheme of 99 prioritized AIBP projects', the State Government will get a mandate registered with RBI/Principal banker on their current account, in favour of NABARD, to the effect that, in the event of default by the State Government in repaying the principle and interest on loans taken from LTIF, NABARD shall have the first charge on the all receipts of the State Government in their current account including from out of the Central Divisible Pool. Further, Agreement between NABARD, MoWR,RD&GR and NWDA in respect of loan for Central Assistance, and between NABARD, NWDA and State Government in respect of loan by State for State share will also be finalized. A MoU in this regard will also be signed by MoWR,RD&GR and concerned States.

(vi) As was done in the case of 'Scheme of 99 prioritized AIBP projects', Ministry of Finance may allow NABARD for cost free funds of appropriate amount each year during 2017-18 to 2021-22 so that rate of interest to States is maintained at about 6% during the entire period of Scheme up to 2021-22.

5.2 If external sources are intended, the sponsoring agency may indicate, as also whether such funds have been tied up?

Source of finance is as indicated at **5.1** above, and no external sources are proposed.

5.3 Indicate the component of the costs that will be shared by the State Governments, local bodies, user beneficiaries or private parties?

In terms of cost component, the proposed scheme has both 'Central' and 'State' components; and State component further divided between 'Special States' and 'General States' components. Besides bearing full burden of Central

component, a substantial part of the State component will also be funded by the Central Government as 'Central Assistance (CA)'.

At aggregate level of the Scheme, the Central Assistance (CA) to States for all components except WALMIs will be as per existing cost sharing provisions for new centrally sponsored schemes – i.e. sharing ratio of 90:10 (Centre:State) in case of projects in Himalayan and North Eastern States (i.e. special States), and 60:40 (Centre:State) in case of projects in General States. The CA for modernization/ extension/ creation of WALMIs for all States is proposed at cost sharing ratio of 90:10 (Centre:State). The total cost of burden of the Central Government and State Governments will be Rs. 38,480.75 crore and Rs. 22,756.25 crore respectively as summarized in **Table-7** below; further details of cost sharing is presented in **Section 7.0** of the **Appendix-C.**

Table-7: Share of Central and States Governments in Total Scheme Cost

(Financial Outlays in Rs. crore)

Sl. No.	Cost Category	Total Cost	Central Share	States' Share	Remarks
(I) State Component					
a	Special States	4401.16	3961.05	440.12	90% Central Assistance for full project components.
b	General States	56577.84	34261.70	22316.13	60% CA for all project components except WALMIs; 90% CA for WALMIs.
Sub-total of States:		60979.00	38222.75	22756.25	
(II) Central Component		258.00	258.00	0	
Grand Total		**61237.00**	**38480.75**	**22756.25**	

The extent of sharing of State component between Centre and individual States may vary from project to project because of incentivization aimed under the scheme. The manner of incentivization and the extent of Central Assistance are described below:

(i) Incentivization will be applied on all components of States' projects excluding modernization/ extension/ creation of WALMIs. Each project will be initially considered as a baseline case from any of the following two categories:
(a) Projects in Special States (Himalayan & North Eastern States);
(b) Projects in General States.

(ii) Performance linked incentivization will be given to all projects for any two performance criteria out of below listed three criteria:
(c) Before-time completion;
(d) Increased water use efficiency; and
(e) Success of PIM.

(iii) For the baseline case of projects in Himalayan and NE States, the CA will be given at 75% rate (i.e. Central:State share of 75:25); and for the

baseline case of projects in other States, the CA will be given at 50% rate (i.e. Central:State share of 50:50).

(iv) For performing projects meeting any one or two of the three listed performance criteria, the CA will be incentivized through 10% point increase per criteria over baseline rate (i.e. Central:State share of a project in Himalayan or NE State meeting two performance criteria will be 95:05; and Central:State share of a project in any other State meeting two performance criteria will be 70:30).

(v) The incentivization shall be regulated through the 'Guidelines for Central Assistance under ISBIG' in a manner so as to generate competitiveness amongst projects. The said guidelines will also ensure that aggregate cost sharing between Centre and State for the Scheme gets restricted to 90:10 (Centre:State) in case of projects in Himalayan and NE States, and 60:40 (Centre:State) in case of projects in General States.

(vi) The incentivized part of CA will be released only on completion of a project and after evaluation of its performance as per the Guidelines.

6. Approvals and Clearances

Requirement of mandatory approvals and clearances from various local, state and national bodies and their available may be indicated in a tabular form (land acquisition, environment, forestry, wildlife etc.)

Barring small extent of land acquisition in few of the projects, no other cases of mandatory approvals (related to environment, forestry, wildlife etc.) are anticipated. Further, as indicated at Para 4.5, the present scheme has not kept any cost provision for land acquisition and the requirement of extra land, including cost of acquisition (if any), shall have to be met entirely by the concerned State Government.

7. Human Resources

7.1 **Indicate the administrative structure for implementing the Scheme. Usually creation of new structures, entities etc. should be avoided.**

The Command Area Development and Water Management (CADWM) Wing of MoWR,RD&GR will be the administrative office of the scheme. The projects under the schemes will be executed by the State Governments through Command Area Development Authorities or other concerned Departments of the State, and necessary support will also be given by the CAD Cells and Project Monitoring Organisation (PMO) of the Central Water Commission (CWC). A Central Project Management Unit (CPMU), supported by appropriate teams of Consultants, will be created in CADWM wing for overall coordination

and overseeing of the project. A brief description of the overall project implementation arrangement is given in **Section 8.0** of the **Appendix-C.**

7.2 Manpower requirement, if any. In case posts, permanent or temporary, are intended to be created, a separate proposal may be sent on file to pers. Decision of Department of Expenditure (such proposals may be sent only after the main proposal is recommended by the appraisal body)

Project will be implemented through the existing manpower of the Central and State Governments.

7.3 **In case outsourcing of services or hiring of consultants is intended, brief details of the same may be provided.**

States will engage sufficient numbers of Social Facilitators[2] for guiding WUAs towards successful and sustainable PIM; and the cost entailed on this account will be booked under State's Project Management component. State Project Implementing Agencies (PIA) may also hire services of individual consultants or consulting firms for specialized activities (e.g. planning & design of 'micro-irrigation', 'reuse of waste-water', 'canal automation' etc.) for which adequate and qualified staff may not be available in-house.

Services of a Technical and Management Consulting Firm will be hired by the CADWM Wing (in Ministry of WR, RD &GR) for establishment of CPMU, and the Consultant will also have sub-units in some of the States for enhancing field level penetration and for extending support to CWC's CAD Cells. Services of an P16organization/ institute of repute working in the area of Social Sciences will also be hired by CPMU for rendering assistance in engagement and management of select Social Facilitators for guiding WUAs towards successful and sustainable PIM.

Care will be taken to ensure that there is no overlap in the activities of State PIA Consultants with the mandates of CPMU Consultants.

8. Monitoring and Evaluation

8.1 **Please indicate the monitoring framework for the Scheme and the arrangements for statutory and social audit (if any).**

The project implementation will be continuously monitored by CPMU through its consultants as well as offices of the CAD Cells and PMO of CWC. Project Implementation Review Committee (PIRC) will be created for bringing continual improvements in the implementation of project. A National Level Steering Committee, under chairmanship of Secretary, Ministry of WR, RD &GR, will be

[2] *A Social Facilitator may be an NGO, or similar entity, having substantial experience in influencing village level social activities and reforms; they will render service as per TOR, and payment made to them will be linked to the specified deliverables.*

constituted for overall guidance of the Scheme and for resolution of major hurdles, if any. The Council headed by CEO, NITI Ayog constituted for monitoring of the 99 prioritized projects will also monitor the implementation of the proposed Scheme, and address the policy matters. Scheme will have the mandatory CAG audit as well as audits of the State AGs. Evaluation and Impact Study of the Scheme, including Social Audit, will also be undertaken through an independent agency at the end of the Scheme. Further detail of the project monitoring arrangement is available in **Section 9.0** of the **Appendix-C.**

8.2 Please indicate the arrangement for third party/independent evaluation? Please note that evaluation is necessary for extension of scheme from one period to another.

The Scheme has been planned for the duration of four years; and all projects under the scheme are expected to be completed within this period. The outcome of the Scheme will be assessed through an Evaluation and Impact Study of the Scheme (including Social Audit) by an independent agency.

9. **Comments of the Financial Advisor, NITI Aayog, Department of Expenditure and other Ministries/Departments may be summarized in tabular form along with how they are being internalized and used to improve this proposal.**

Para wise comments of IFD along with replies of CADWM Wing are annexed at Appendix-D.

(*Comments of the above organisations will be furnished in due course of time)*

10. Approval Sought:

Approval is solicited on following points:

(i) Approval for implementation of the proposed Centrally Sponsored Scheme of Incentivization aiming for:

a. Completion of CADWM works along with correction of system deficiencies in canal network for bridging the gap between Irrigation Potential Created and Irrigation Potential Utilised;

b. Increasing water use efficiency in irrigation and providing assured supply of water to every farm field; and

c. Transfer of 'control and management of irrigation system' to Water Users' Associations.

(ii) Administrative approval and Expenditure sanction for the Scheme's total estimated cost of Rs. 61,237 Crore as per Scheme component-wise and Cost category-wise breakup given in **Table-5** and **Table-6** respectively**.**

(iii) Administrative approval and Expenditure sanction for the Central share of Rs. 38,480.75 Crore as per details given in **Table-7.**

(iv) Approval to change component-wise allocation from one component to other (in **Table-5**) and to change cost proportion of different cost categories (in **Table-6**) without changing Scheme's total cost of Rs. 61,237 Crore or the Central share of Rs. 38,480.75 Crore.

(v) Approval for bringing need based changes in the tentative list of Projects and the extent of structural and non-structural interventions (as given in Appendix-C), and for adding new projects as per proposals received from all the States /Union Territories on India.

(vi) Approval for flexibility in extent of Central Assistance (CA) at project levels for all components except WALMIs, aiming for incentivization of better performing projects (*in terms of before-time completion; increased water use efficiency; and success of PIM*) while ensuring that aggregate cost sharing between Centre and State at the overall Scheme level gets restricted to 90:10 (Centre:State) in case of projects in Himalayan and NE States and 60:40 (Centre:State) in case of projects in other States.

(vii) Approval for Central Assistance (CA) for the modernization/ extension/ creation of WALMIs at sharing cost ratio of 90:10 (Centre:State) for all States.

(viii) Approval for booking of Consultancy cost (if any) for preparation of DPRs, taken up by the State Governments after 01/05/2017, under the States' Project Management component with retroactive effect.

(ix) Approval for convergence with the efforts of Ministry of Agriculture & Farmers Welfare (MoA&FW) for use of "Micro Irrigation Fund" (MIF) for the micro-irrigation projects targeted under ISBIG thereby enabling the targeted farmers for making requisite investment on the drip/ sprinklers sets so as to draw immediate and full benefits of the Scheme.

(x) Approval for borrowings from NABARD, for funding of Central share to the extent required.

(xi) Approval of arrangement for States share to be borrowed by States through NABARD as per the extent of their requirements.

(xii) Approval for the provision whereby Finance/ Department of Financial Services may provide appropriate funds for additional equity every year from 2017-18 to 2021-22 for capitalization of NABARD for raising requisite borrowing from open market as per requirement of CA and State share for completion of the Scheme.

(xiii) Approval for the provision whereby Ministry of Finance may provide to the NABARD requisite cost free funds every year during 2016-17 to 2019-20 on which interest cost would be borne by Ministry of Finance/

Government of India so that the rate of interest to States is maintained at about 6% during the entire period of borrowing.

(xiv) Approval for provision that no separate investment clearance will be required for projects of this Scheme as it is predominantly Command Area Development & Water Management Scheme which requires only State level approval as per prevalent Guidelines for Investment Clearance in respect of Irrigation and Flood Control Projects.

(_____)
Joint secretary/ Commissioner to the Government of India
Tel. No._____
Fax. No._____
E-mail_____

{Executive Summary along with the Concept Paper outlining the main elements and overall architecture of the proposed Scheme is given as **Appendix-C**}

Appendix-A

Base Level Cost Estimate of Scheme at Beginning of Project

Sl. No.	Scheme Component	Unit	Quantity	Rate (Rs)	Amount (Rs Crore)
(I) STRUCTURAL INTERVENTION					
i	On Farm Development Works (OFD)	ha	56,00,000	35,000	19,600
ii	Correction of system deficiency(CSD)*	ha	178,00,000	13,000	13,090
iii	Infrastructure for micro irrigation	ha	24,00,000	50,000	12,000
iv	Installation of solar power system	ha	7,20,000	50,000	3,600
v	Pilot projects for reuse of waste water	No.	10	200,00,00,000	2,000
vi	Conjunctive use of groundwater	ha	16,80,000	9,000	1,512
vii	Pilot projects for canal automation	No.	10	50,00,00,000	500
				Sub-total of Structural Intervention:	**52,302**
(II) NON-STRUCTURAL INTERVENTION					
viii	Transfer of irrigation system to WUAs	No.	16,000	16,00,000	2,560
ix(a)	Modernization/ extension of WALMIs	No.	14	50,00,00,000	700
ix(b)	Creation of new WALMIs	No.	7	100,00,00,000	700
x(a)	Incremental Establishment in Centre	LS			200
x(b)	Incremental Establishment in States	LS			1,125
xi	Capacity building of the PIAs & WUAs	LS			128
				Sub-total of Structural Intervention:	**5,413**
				Grand Total:	**57,715**

** Cost of Correction of System Deficiency restricted to one-third of the cost of other components (i.e. On-farm development, Micro-irrigation, Solar Power, Conjunctive use, and transfer of system to WUAs)*

Appendix-B

Special States', Other States', & Central Component's Cost Proportion

(Amount in Rs. Crore)

Sl. No	Scheme Component	Special States	General States	Central Component	Total
(I) STRUCTURAL INTERVENTION					
i	OFD Works	1506.23	19413.67	0.00	20919.90
ii	CSD Works	1005.95	12965.55	0.00	13971.50
iii	Micro irrigation	922.18	11885.82	0.00	12808.00
iv	Solar power system	276.65	3565.75	0.00	3842.40
v	Reuse of waste water	0.00	2134.70	0.00	2134.70
vi	Conjunctive use	116.19	1497.61	0.00	1613.80
vii	Canal automation	0.00	533.70	0.00	533.70
Sub-Total Str. Intervention:		**3827.20**	**51996.80**	**0.00**	**55824.00**
(II) NON - STRUCTURAL INTERVENTION					
viii	Transfer of Irr. to WUAs	184.32	2375.68	0.00	2560.00
ix(a)	Mod./ Ext. of WALMIs	0.00	650.00	50.00	700.00
ix(b)	Creation of WALMIs	300.00	400.00	0.00	700.00
x(a)	Inc. Est. in Centre	0.00	0.00	200.00	200.00
x(b)	Inc. Est. in States	81.00	1044.00	0.00	1125.00
xi	Cap. building of PIA/WUA	8.64	111.36	8.00	128.00
Sub-Total Non-Str. Interv:		**573.96**	**4581.04**	**258.00**	**5413.00**
Grand Total:		**4401.16**	**56577.84**	**258.00**	**61237.00**

APPENDIX-C

SCHEME OF INCENTIVIZATION FOR BRIDGING IRRIGATION GAP
CONCEPT PAPERP

Executive Summary

1. Name of Scheme:	Incentivization Scheme for Bridging Irrigation Gap (ISBIG)
2. Total Cost:	Rs. 61,237 Crore
3. Duration:	Four Years (48 months): 3rd Quarter of 2017-18 (FY1) to 2nd Quarter of 2021-22 (FY5)
4. Nature of Scheme:	Centrally Sponsored Scheme, with a Central component
5. New or Continuing:	New Scheme, evolved from the ongoing CADWM scheme
6. Umbrella Scheme:	PMKSY-HKKP
7. Objectives of Scheme:	The Scheme aims for: (a) Completion of CADWM works along with correction of system deficiencies in canal network for bridging the gap between Irrigation Potential Created (IPC) and Irrigation Potential Utilised (IPU); (b) Improving the water use efficiency in irrigation and providing assured supply of water to every farm field; and (c) Transfer of control and management of irrigation system to the Water Users' Associations (WUAs).
8. Merits/ special features of Scheme:	The Scheme has following special features: (i) Incentivization of central assistance for better performing projects (ii) In Mission mode with assurance of financial support for central assistance as well as counterpart funding by the States and with time bound targets (iii) Extensive Coverage to bridge fully the existing (known) IPC-IPU gap (iv) Enhanced Micro-irrigation targeting 30% coverage (v) Community based Solar Power System for Micro-irrigation (vi) Conjunctive use of ground water (vii) Canal automation for introducing control & measurement (viii) Reuse of municipal and industrial waste-water in irrigation sector (ix) Deeper penetration of Water Education (x) Participatory Irrigation Management to be the focal-point of Scheme
9. Projects covered:	Scheme covers 317 existing projects in 24 States targeting CADWM works in balance Culturable Command Area (CCA) of 80 Lakh Hectare
10. Cost break-up:	*Amount in Rs. Crore*

Component	Total Cost	Central Share
State Component	60979.00	38222.75
Central Component	258.00	258.00
Grand Total	**61237.00**	**38480.75**

11. Key Outcomes:	Key Outcomes of the Scheme will be:

- Bridging of the IPC & IPU gap:
  - i On Farm Development Works — 56 Lakh hectare
  - ii Correction of system deficiency in canal network — 178 Lakh hectare
- Improving water use efficiency & providing assured supply of water:
  - iii Infrastructure for micro irrigation — 24 Lakh hectare
  - iv Installation of solar power system — 7.2 Lakh hectare
  - v Pilot projects for reuse of waste water — 10 Projects
  - vi Conjunctive use of groundwater — 16.8 Lakh hectare
  - vii Pilot projects for canal automation — 10 Projects
- Transfer of control and management of irrigation system to WUAs (PIM):
  - viii Transfer of irrigation system to WUAs — 16000 WUAs
  - ix(a) Modernization/ extension of WALMIs — 14 Nos.
  - ix(b) Creation of new WALMIs — 7 Nos.

1.0 Background

1.1 Command Area Development (CAD) works through CADWM[3] Programme of Government of India are in implementation since 1974-75. The programme has been brought under Pradhan Mantri Krishi Sinchai Yojna (PMKSY) - Har Khet Ko Pani from 2015-16 onwards. The main objective of taking up CAD works is to enhance utilisation of irrigation potential created, and improve agriculture production on a sustainable basis through Participatory Irrigation Management (PIM). In order to promote water use efficiency in irrigation, the CADWM programme has also been targeting at least 10% of the Culturable Command Area (CCA) of the included projects for development of micro-irrigation infrastructure for facilitating use of sprinkler/ drip/ pivots irrigation systems. The CADWM programme mandates formation of Water Users' Associations (WUAs) under each project, and also gives them start-up support through one-time infrastructure grant and functional grant.

1.2 The CADWM projects are essentially executed by the State Government Departments (CADA, WRD, PWD, PHE etc.) and they have been in operation in almost all States/ Union Territories. Owing to this continuously ongoing Scheme, by the end of FY 2015-16, 208 lac hectare (Lha) of the Culturable Command Area (CCA) has become utilizable in 371 irrigation projects. Under the initiatives of this Scheme, about 85,000 WUAs were also formed, although the anticipated transfer of irrigation management to WUAs was successful only to a miniscule level. In the beginning of FY 2016-17, CADWM works were ongoing in 152 projects targeting a CCA of about 70 Lha. But, with the new Scheme of prioritized AIBP (Accelerated Irrigation Benefits Pmerogram) projects approved by Cabinet on 27th July 2016, CADWM works got restricted to only 99 prioritized AIBP projects from 2016-17 onwards.

1.3 However, the Para 3.3.5 of the cabinet note of this scheme ('PMKSY – Establishment of Mission for completion of prioritized irrigation projects and funding arrangements', CD-473/2016, dated 22.07.2016) stated that "*CADWM works of all other projects are proposed to be funded through new scheme of incentivization for bridging the gap between IPC and IPU, the works under which shall also include system correction / renovation and modernization requirement of completed projects in addition to pressurized pipe system and use of sprinklers and Drip for their functioning at optimum level*." The proposed **'Incentivization Scheme for Bridging Irrigation Gap (ISBIG)**' has its genesis in the above statement of the approved Cabinet Note.

1.4 With the intent of assessing the IPC and IPU gap, a study of 42 completed AIBP projects was carried by CWC through analysis of IPC and IPU related information furnished by 8 States – namely, Andhra Pradesh, Chattisgarh, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, and Telangana. The average

[3] *The ongoing scheme of CAD was restructured into CADWM programme in 2004-05.*

gap between total irrigation potential created and total irrigation potential utilized as percentage of total irrigation potential created under these projects was assessed as 25.60%. However, a very wide variation has been noticed in the percentage gap of individual States varying from a low of 2.08% (in Rajasthan) to a high of 87.20% (in Jharkhand). The State of Maharashtra, with lion's share of 16 projects in the study basket, also shows a high level of 49.06% gap. A closer examination of Maharashtra data indicates shortcomings in presentation and analysis of IPC and IPU data with potential for inducing substantial error in computation of IPC-IPU gap. Moreover, Maharashtra also presents abnormality in many of its projects which show IPC lower than the CCA of projects. IPC is the measure of total gross area cultivable by different crops in a year; thus an area with potential for multiple crops gets counted as many times as the crops are planned in a year, and hence IPC in normal circumstances shall be equal to or higher than the CCA of a project. The anomaly is perhaps owing to misinterpretation of CCA; and it may also be owing to the use of high water consuming crops compelling overall reductions in crop areas, leading to yearly rotation and variations in targeted IPC. Further the IPU, as a measure of gross area actually irrigated in a particular year, is also a variable quantity; and may have fallen short in the pertinent span of data collection because of lean monsoon in that particular year. The reasons for IPC-IPU gap indicated by Maharashtra also include issues of reluctance by farmers, migration of farmers, and diversion and pilferage of project water; besides, there may be cases where project water use is wrongly accounted as groundwater use. If projects of Maharashtra are excluded from Study, the average IPC-IPU gap comes down to a very moderate level of 13.46% from the otherwise high value of 25.60%.

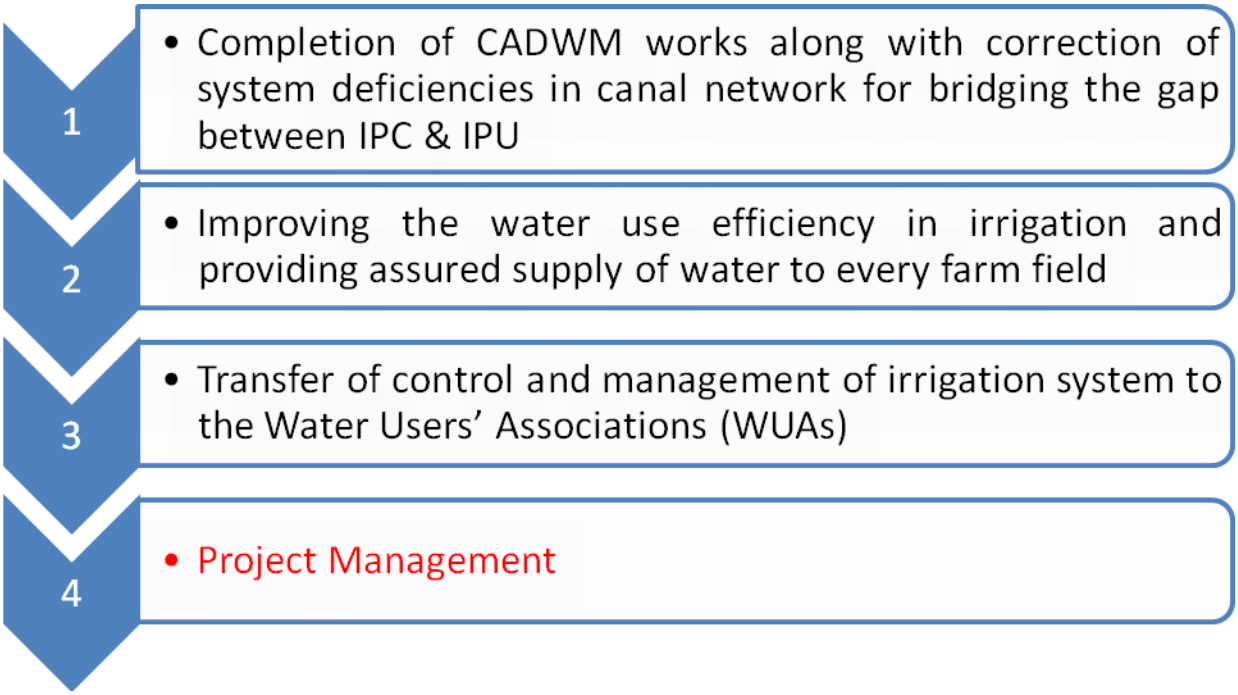
1.5 As indicated above, both IPC and IPU are variable parameters which may not provide a firm quantitative basis for formulation of the Scheme, even if objective of the Scheme is to bridge the IPC-IPU gap in qualitative terms. Hence, the objective of bridging IPC-IPU gap is sought to be achieved through structural interventions related to CADWM works in the Culturable Command Area of project, and the correction of system deficiencies in project's canal network[4]. The other reasons of IPC-IPU gaps will be addressed through non-structural interventions focussing on strengthening of participatory irrigation management.

2.0 Objectives of Scheme

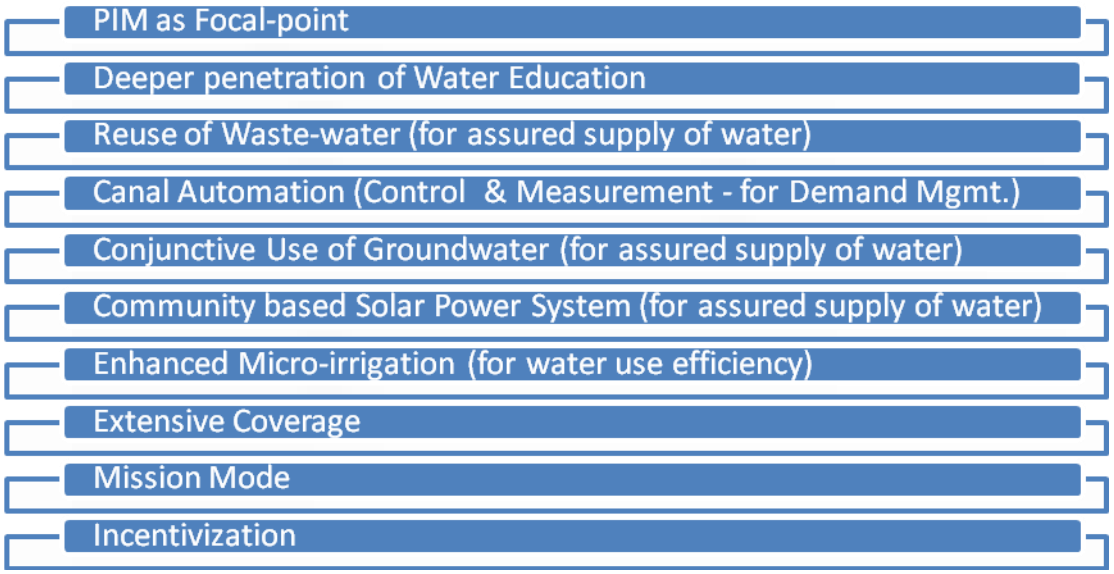
2.1 The main objective of the Scheme is to bridge the gap between Irrigation Potential Created (IPC) and Irrigation Potential Utilised (IPU) in India's completed water resources projects. In addition, the Scheme aims for providing assured supply of

[4] *Para 3.3.2 of the Cabinet Note of 'PMKSY – Establishment of Mission for completion of prioritized irrigation projects and funding arrangements' states that "the gap in creation and utilization is due to lack of command area development works, system deficiencies, non-maintenance of structures and canal networks, siltation in minors, change in cropping pattern, poor planning etc."*

water to every farm field by bringing improvements in water-use efficiency; and it also seeks to strengthen the Participatory Irrigation Management by transfer of control and management of irrigation system to the Water Users' Associations. The above three aims of the Scheme are covered by three separate activities, with an additional (fourth) activity focussing on Project Management. Thus, the four-fold aims/ activities for which funding will be provided by the Scheme are as under:



3.0 Merits/ Special Features of Scheme



3.1 Incentivization: Despite a long period of operation of the CADWM Scheme, a large gap has persisted between IPC and IPU. Besides, the level of irrigation water-use efficiency and the extent of PIM have also not touched the desired marks. Hence the newly proposed Scheme aims for its three-fold objectives through incentivization of central assistance (i.e higher extent of assistance) for better performing projects.

3.2 Mission Mode: The proposed Scheme will be accomplished in a Mission mode with assurance of financial support for central assistance as well as counterpart funding by the States, and with time bound targets. A Central Project Management Unit (CPMU) – with support of a technical and management consulting firm – will be constituted in Ministry of WR, RD & GR for overseeing of the project in mission mode.

3.3 Extensive Coverage: The Scheme seeks to bridge fully[5] the existing (known) IPC-IPU gap in a single stroke by inclusion of all such projects where irrigation capacity has been created but CADWM works are pending. New Lift Irrigation Schemes from existing reservoirs (without pending cases of land acquisition, and involving short gestation period not exceeding 2 years) with 100% coverage under micro-irrigation will be considered for *pari-passu* implementation with scope of Central Assistance restricted to infrastructure for Micro-irrigation (as applicable under CADWM).

3.4 Enhanced Micro-irrigation: The present norm of minimum 10% coverage of micro irrigation (under CADWM programme) has been enhanced to 30%. The scope of Central Assistance will be restricted to infrastructure for Micro-irrigation as applicable under CADWM. Convergence with MoA&FW's Micro-irrigation scheme will be required for facilitating installation of the micro-irrigation devices (e.g. sprinkler, rain gun, Drip sets etc.) by individual farmers below farm outlets, as the same are not being covered under the micro-irrigation infrastructure. A corpus of Rs.5000 crore has been allocated to NABARD for creation of Micro Irrigation Fund, which can be utilized towards this intent by MoA&FW. For balance area, the micro-irrigation infrastructure shall be "future ready" with minimum 2 kg/cm^2 pressure at the farm outlet so that farmer can make future investment on drip/ sprinklers.

3.5 Community based Solar Power System for Micro-irrigation: With a view of enabling assured water supply, about 30% of the area covered under micro-irrigation will also be covered by solar powered pumping system. Preference will be given to those areas where the grid power is not available or not available reliably.

3.6 Conjunctive use of groundwater: With a view of realizing assured water supply for every farm field, especially in the lean monsoon periods, about 30% of the area covered under conventional (flow/ flood) irrigation will be targeted for conjunctive use of groundwater. The approach will be to include volumetric and seasonal assessment of local water resources in addition to canal water; and the overall management plan will thus constitute the recharge-discharge interplay of the local aquifer while allocating total water between various users and uses. The activities covered will include components of groundwater development (dug wells, tube-wells, farm-ponds etc) as

[5] *In line with the directions of the Cabinet Note of 'PMKSY – Establishment of Mission for completion of prioritized irrigation projects and funding arrangements' (Para 3.3.5).*

well as strengthening of Participatory Ground Water Management (PGWM). Strategic handholding support to the WUAs (over and above the support envisaged for PIM) by technical resource agencies with extensive experience in PGWM will also be provided.

3.7 Canal Automation: With a view of improving demand-side management, the canal automation system will be implemented in about 10 projects on pilot basis. The implementation will mainly focus on the elements of control and measurements[6]; and accordingly the integration of automation will be done from the farm-end and upward, rather than from head-works-end and downward as is conventionally approached.

3.8 Reuse of Waste-water: With a view of augmenting water for assured supply of water to every farm field, a new Intervention has been proposed for the reuse of municipal and industrial waste-water in irrigation sector[4]. The new measure will be implemented in about 10 projects on pilot basis. The intervention will mainly focus on creating hydraulic connectivity between outflow point of a Sewage Treatment Plant (STP) or an Industrial Affluent Treatment Plant (IATP) and the distribution network of the irrigation project; and intervention for incremental treatment of the waste water, wherever necessary, will also be included.

3.9 Deeper penetration of Water Education: Aiming for deeper penetration of water education amongst all stakeholders and for all forms of water, the modernization/ extension of existing 'Water And Land Management Institutes (WALMIs)' will be carried out; and new WALMIs will be created in States where not in existence.

3.10 PIM as Focal-point: Non-structural interventions proposed in the Scheme will strengthen the WUAs, and a project will be considered as complete only on transfer of control and management of the irrigation system to WUAs of the project – thus ensuring commencement of the participatory irrigation management[4]. Services of Social Facilitators (NGOs, or similar entities, having substantial experience in influencing village level social activities and reforms) will be hired for accomplishment of specified deliverables linked with the success of PIM.

4.0 Projects Covered Under Scheme

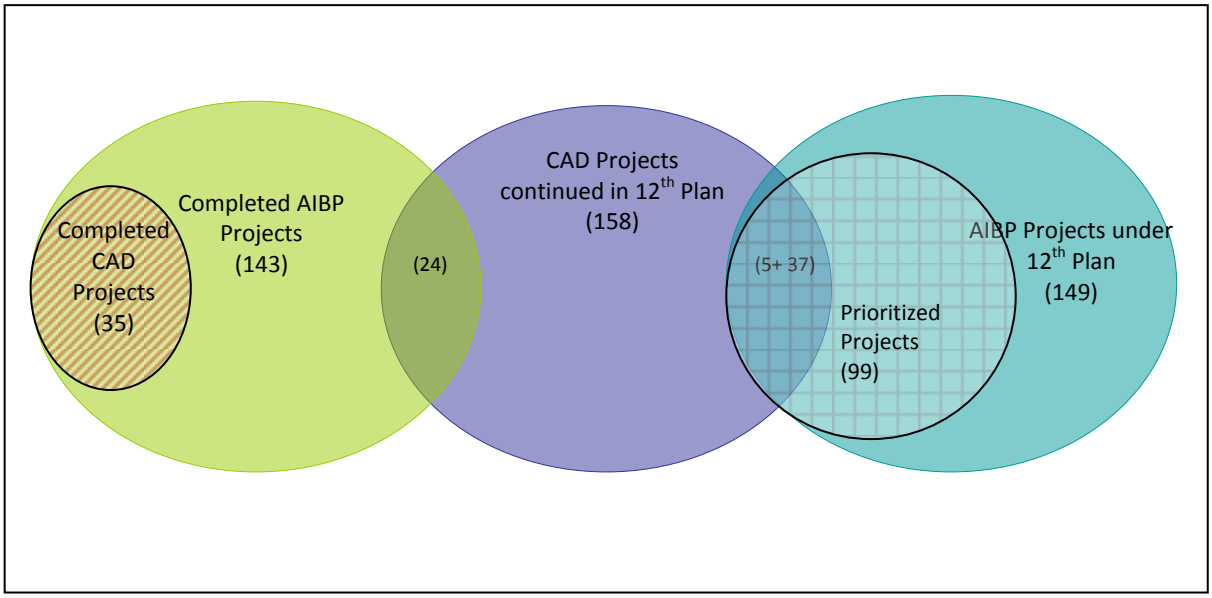
4.1 The CAD works, with focus on on-farm development below the level of minors, have been initially taken up by the Ministry of Water Resources as a separate scheme independent of the AIBP scheme which was focussed on water conveyance up to distributaries and minors. So far CAD works on such 219 projects have been completed achieving Culturable Command Area (CCA) of 15.0 million hectares (Mha). Simultaneously, Ministry has taken up AIBP scheme (since 1996-97) for accelerating creation of irrigation potential by targeting completion of languishing projects. Till date,

[6] *In line with directions contained in Minutes of Meeting taken by Prime Minister on 30.03.2017 on PMKSY*

143 AIBP projects have been completed of which 35 projects (CCA: 1.27 Mha) have been completed from CAD angle as well, and in 24 projects (CCA: 2.37 Mha) the CAD works were continuing in the 12th Plan till prioritization of 99 AIBP projects.

4.2 There have been 149 ongoing AIBP projects under the 12th Plan, of which 42 (CCA: 3.07 Mha) were common with the ongoing CAD projects. However with the identification of prioritized AIBP projects, the number of AIBP projects has been restricted to 99 and 37 ongoing projects of CAD have become common with the prioritized projects, while the remaining 5 projects have been discontinued.

4.3 There were a total of 158 ongoing CAD projects in the 12th Plan targeting CCA of 9.58 Mha. These include 24 projects where AIBP has been completed, 37 projects where AIBP works have been prioritized and 5 projects of the remaining AIBP projects under 12th Plan. However as of now, other than prioritized projects, all ongoing works of CAD have been discontinued. A schematic presentation of the overall status of CAD works has been brought out in the Venn diagram below:



4.4 The preliminary Scheme was prepared incorporating above initial information covering all outstanding CAD works, excluding the CAD works of the 99 prioritized AIBP projects and 20 such projects where only a very small extent of CCA remained to be covered. Breakup of the thus identified outstanding CAD works spread over 185 projects is given in the **Table-A** below:

Table-A: Projects Covered in the Preliminary Scheme

(CCA in Million hectares)

Sl. No.	Particulars of Outstanding CAD works	No. of projects	CCA Targeted	CCA Covered	CCA Balance
1	Completed AIBP projects excluding completed CAD projects (35) and CAD projects continued in 12th Plan (24).	79	1.13	0.0	1.13

2	CAD projects continued in 12th Plan excluding CAD projects overlapping with prioritized AIBP projects (37).	106	6.54	2.12	4.43
Total		185	7.67	2.12	5.56

4.5 The Preliminary Concept Paper of the Scheme was shared with all State Governments. State level consultations were also held from 5th April to 17th April, 2017, and the revised list of targeted projects (and the targeted balance CCA) as proposed by States and as recommended by CWC's regional offices was then finalized. In this exercise, some of the earlier identified projects were dropped, or their balance CCA were modified; and some additional projects were also included as per information furnished by the States. Thus updated target of outstanding CADWM works incorporated in the Scheme is 80 lakh hectares spread over 317 projects across 24 States as per State-wise abstract presented in **Table-B** below and the detailed list of projects given in **Annexure-I**.

Table-B: State-wise Outstanding CADWM Works Targeted Under the Scheme

Sl. No.	Name of State	No. of projects	Total CCA in Thousand hectare	Balance CCA in Thousand hectare
1	Andhra Pradesh	24	254.596	254.596
2	Arunachal Pradesh	4	22.000	22.000
3	Assam	15	46.454	42.325
4	Bihar	13	2607.368	907.132
5	Chhattisgarh	6	413.100	115.350
6	Gujarat	6	61.867	61.867
7	Haryana	8	1368.040	980.727
8	Himachal Pradesh	6	30.933	27.496
9	Jammu & Kashmir	32	311.968	283.950
10	Jharkhand	5	37.330	37.330
11	Karnataka	9	1080.562	160.972
12	Kerala	2	63.224	17.685
13	Madhya Pradesh	10	997.370	559.436
14	Maharashtra	28	803.733	189.627
15	Manipur	6	83.272	77.623
16	Nagaland	1	1.080	1.007
17	Odisha	32	783.270	237.780
18	Punjab	12	2067.619	1249.257
19	Rajasthan	13	1184.849	825.299
20	Tamil nadu	8	53.047	21.941
21	Telangana	28	471.949	241.796
22	Uttar Pradesh	15	4131.203	960.680

23	Uttarakhand	31	121.446	121.446
24	West Bengal	3	841.230	671.796
	Grand Total	317	17837.510	8069.118
	Rounded-off to Lakh Hectare		**178**	**80**

4.6 In terms of Central Assistance sharing ratio, the States in Himalayan region and those coming under North Eastern region are given status of Special States. Seven States of above list (namely, Himachal Pradesh, Jammu & Kashmir, Uttarakhand, Arunachal Pradesh, Assam, Manipur, and Nagaland) are covered under Special States category; and they cover 95 projects with Total CCA of 6.17 Lakh Hectare and Balance CCA of 5.76 Lakh Hectare respectively. The target coverage proportion of Special States is 3.47% and 7.20% for Total CCA and Balance CCA respectively.

5.0 Activities Targeted Under Scheme

5.1 Both structural and non-structural activities are targeted under the Scheme as summarized below:

- **Structural Intervention:**
  - Bridging of the IPC & IPU gap:
    - On Farm Development Works:
      - Creation of field channel/ pipe network below the outlets of distribution network
      - Land levelling and realignment of field boundaries
      - Improvement in farm drainage system
      - Reclamation of waterlogged farm areas
    - Correction of system deficiency in canal network
  - Improving water use efficiency & providing assured supply of water:
    - Infrastructure for increased coverage of micro irrigation system
    - Installation of solar power system for micro-irrigation
    - Infrastructure for conveyance and additional treatment of municipal and industrial waste water for augmenting water for the farm use
    - Infrastructure for conjunctive use of groundwater
    - Automation of canal system for control and measurement of irrigation supplies
- **Non-structural Intervention:**
  - Transfer of control and management of irrigation system to WUAs:
    - Strengthening of Participatory Irrigation Management (PIM) for sustainable operation and maintenance of irrigation network
    - Deeper penetration of Water Education
      - Modernization and extension of existing WALMIs/IMTIs
      - Creation of new WALMIs in States where not in existence

- Project management:
  - Creation of incremental establishment
  - Capacity building of the PIAs & WUAs

5.2 Bridging of the gap between IPC and IPU: The IPC-IPU gap (represented as balance CCA of a project) will be bridged by structural intervention involving activities of: (a) On farm development (OFD); and (b) Correction of deficiencies in the existing water conveyance system of the project.

5.2.1 The OFD component is essentially for connecting every farm field under the command with the outlets of the distribution system (government outlets) through a network of field channels (FC) and/ or pipelines; and it may also involve one or more of the three sub-activities – namely: land levelling and realignment of field boundaries; improved farm drainage system; and reclamation[7] of waterlogged farm areas – depending upon varied requirements of the targeted fields. Since the size, length and capacity of the field channels may vary from case to case depending upon numbers, size, and shapes of the farm holdings within the *Chak* (targeted command below government outlet), the extent of lining may be restricted to an optimum length in a cost effective manner and the unlined FCs created for balance lengths. For the purpose of cost estimation, extent of OFD works are represented in terms of targeted CCA, which is taken as 70% of the balance CCA of a project (remaining 30% targeted for micro-irrigation). A reasonable estimate of the balance CCA is available for the projects covered in the Scheme, and the cost estimate of OFD component is prepared by taking an average cost of Rs.35,000 per hectare of targeted CCA[8]. During State-level consultations, need for inclusion of 'farm roads' as OFD component was also raised; and it was agreed to consider the same by convergence with the Scheme of MGNREGA operated by MoRD wherein construction of Gravel road/ WBM road is permitted.

5.2.2 Many of the irrigation projects have been operating much below their potential for want of adequate funds for O&M related activities such as: cleaning of the channels by de-silting and weeding; raising earthwork in embankments or dressing the bed and side-slopes to the design standard and removing undercuts in hard strata; strengthening of banks in filling sections; restoring bed gradients; replacing and painting metal parts in gates and hoists; making control and measuring devices fully functional etc. These water conveyance deficiencies are expected in any part of the canal network below the head regulator – i.e. in main canal, branch canal, distributaries, or minors – and as of now the estimate of the extent of such deficiencies for projects covered in the Scheme is not known. Hence for cost estimate of the activity of correction of system deficiencies, an average provision Rs. 13,000 per

[7] *Intervention for reclamation of water logged area shall not be sought merely on the basis of present condition of field, but by envisaging the overall improved condition of field after total project implementation.*
[8] *Rate taken from the guidelines of ongoing CADWM programme.*

hectare of project's total CCA (and not balance CCA) has been made on the basis of analysis carried out for Sawan Bhadon Medium Irrigation Project (Rajasthan), Sukla Irrigation Project (Assam), and Girna Major Project (Maharashtra)[9]. In order to avoid inclusion of typical ERM projects, the cost of system deficiency correction per project will be limited to one-third of the total cost of other components of that project (namely: on farm development, micro-irrigation, solar power backup, conjunctive use, and strengthening of PIM) for computation of Central Assistance. However, once included, the full scope of correction of system deficiency will have to be implemented by the State with additional costs, if any, born by the respective State.

5.3 Improving of water use efficiency in irrigation and providing assured supply of water to every farm field: This objective is again to be met by means of structural intervention. A much higher level of water-use efficiency is targeted by the creation of Infrastructure for increased coverage of micro irrigation system, and use of solar powered pumping. Augmentation of water for farm use is targeted by: (i) creation of Infrastructure for reuse of municipal and industrial waste water; (ii) conjunctive use of groundwater; and (iii) implementation of demand-side management by introducing elements of control and measurement through canal automation.

5.3.1 Planning of micro-irrigation should ensure maximization of CCA beyond the areas under gravity flow, assured irrigation to tail-enders, and supply of water in volumetric basis. Micro-irrigation infrastructure includes components of sump, pump, HDPE pipelines, and pertinent devices needed for bringing efficiency in water conveyance and field applications through sprinklers, rain guns, drip, pivots etc[10]. In case of micro-irrigation, other components such as land levelling, drainage works, reclamation of water logged areas etc would be discarded entirely. For the purpose of cost estimation, extent of micro-irrigation works are represented in terms of targeted CCA, which is taken as 30% of the balance CCA of projects. The cost estimate of micro-irrigation component is prepared by taking an average cost of Rs. 50,000 per hectare of targeted CCA[11].

5.3.2 Community based solar pumping system for micro-irrigation will be installed in areas where the grid power is either not available or available without any surety. Projects of East and North-east areas of the country will be given greater preference for inclusion of this activity. Solar powered pumping systems of different ratings ranging from 10 hp to 40 hp will be installed depending upon the size of the *chak* of individual outlets. The solar power system will also be connected to the grid wherever

[9] The three projects of Rajasthan, Assam & Maharashtra vary considerably in terms of per hectare cost of system deficiency corrections (Rs. 18,610, 65,674 & 1684 respectively). Combined cost of all three projects (Rs. 135.88 crore) and combined irrigation potential (102 Thousand ha) has been used for proposed average rate.

[10] The devices – such as sprinkler/ rain gun/ Drip sets etc. – needed to be installed by individual farmers below farm outlets are not part of the micro-irrigation infrastructure. Farmers are expected to bear the cost of such devices or avail subsidies available in extant scheme of the Ministry of Agriculture.

[11] Rate taken from the guidelines of ongoing CADWM programme.

grid supply is also available; the solar PV arrays installed will be of such power ratings that the total annual solar energy generation becomes more than the annual energy requirements, so that excess power generated can be purchased by the State DISCOMS. The activity will cover the cost of supply, installation, and commissioning of solar water pumping system, along with grid connectivity wherever available. For the purpose of cost estimation, extent of solar power installations are represented in terms targeted CCA, which is taken as 30% of the CCA proposed to be covered under micro-irrigation. The cost estimate of solar power system is prepared by taking an average cost of Rs.50,000 per hectare of targeted CCA on the basis of analysis carried out for a pilot project in Haryana[12].

5.3.3 The activity for reuse of waste water in irrigation has been included at an introductory and experimental level targeting only about 10 projects. The component will not only augment the irrigation water, but also lead to reduction in the river-water and groundwater pollution levels; and since an exact measure of the cost of benefits would be difficult to assess, the component would not be rated for economic viability. Only the existing Sewage Treatment Plants or Industrial Waste-water Treatment Plants will be targeted as source of waste-water for augmentation of irrigation in the select projects. The Scheme will cover the cost component of: (i) creating any additional treatment facility for improvement of water quality for irrigation purpose; (ii) infrastructure for conveyance of waste-water up to irrigation canal network; (iii) planning and design activities – including social and environmental studies, if needed. The exact scope, viabilities and cost estimates of the industrial and municipal waste-water reuse will become known only at DPR preparation stage. Hence for cost estimate of the activity of reuse of waste-water, an average provision Rs. 200 crore per project has been made on the basis of analysis carried out for utilization of sewage/ industrial waste water of Ludhiana city in Lower Budha Nallah Project (Punjab)[13].

5.3.4 Irrigation projects in India are designed only for 75% dependability; hence the gap in availability of surface water in lean monsoon years needs to be bridged by the groundwater, while excess surface water in good monsoon years needs to be utilized for recharging groundwater. Conjunctive use of groundwater is thus inbuilt in the philosophy of a surface water irrigation projects, but it has largely remained on paper. Application of the conjunctive use paradigm has now become necessary for the systematic use of surface and groundwater in improving efficiency, equity and sustainability of water resources in irrigation sector. Accordingly, provision of conjunctive use of groundwater is planned in 30% of the CCA covered under conventional (flow/ flood) irrigation. However, the exact scope, viabilities and cost

[12] *As per rate analysis done by Haryana for the outlet RD-44600/R Paharpur Minor, the per hectare cost of solar powered pumping system along with grid connectivity is about Rs. 54,200 (Approx.).*

[13] *The proposed project will utilize waters from CETPs and STPs to irrigate 13,538 ha of land at an estimated cost of Rs. 138 crore. The size and scope of other projects may vary substantially, and hence an average rate of Rs. 200 crore per project has been taken assuming irrigation benefit in about 20,000 hectare per project.*

estimates of the interventions needed for this activity are expected to vary widely from project to project and will become known only at DPR preparation stage. Hence for cost estimate of the activity of conjunctive use of groundwater, an average provision Rs. 9000 per hectare has been made on the basis of information gathered from non-governmental organizations/ entities closely associated with the participatory groundwater management activities[14].

5.3.5 The implementation of demand-side management in irrigation sector has been difficult mainly on account of the complete absence of control and measurement system at water user's end. The technological solutions are available in the form of canal automation system, but they are often found to be cost prohibitive owning to the need for integration of system over vast spread of project's command. Narrowing down the objectives of available system to the elements of control and measurement, the canal automation system will be implemented in about 10 projects on pilot basis by taking up integration of automation from the farm-end and upward up to the extent of distributaries or branch canals. This will enable centralized control by the WUAs, and later on by the Distributory Committees as and when they become effective. For the cost estimation of the activity of canal automation, an average provision Rs. 50 crore per project has been made on the basis of analysis carried out for Narayanpur Left Bank Canal (NLBC) Project of Karnataka[15].

5.4 Transfer of control and management of irrigation system to WUAs: This objective will be met by means of non-structural intervention targeting: (a) Strengthening of participatory irrigation management for sustainable operation and maintenance of irrigation network; (b) Modernization and extension of WALMIs/IMTIs as well as creation of new WALMIs (in States where not in existent) for effective and deeper penetration of water education.

5.4.1 Strengthening of PIM will be initiated by formation of WUAs (wherever nonexistent) and supported by the sub-activities of: (a) release of one-time functional grant to WUAs; (b) release of one-time infrastructure grant to WUAs; (c) Agriculture Livelihoods Support Services [ALSS]; and (d) training and demonstration to farmers/ WUAs. The project will be considered as completed only on transfer of control and management of irrigation system to WUAs[16]. For the purpose of cost estimation, the number of WUAs has been estimated by assuming one WUA per 500 hectare of CCA; and an average cost of Rs.16 lakh per WUA has been taken for strengthening

[14] The non-governmental organizations/ entities involved in the discussion are: Arghyam, ACWADAM (Maharashtra), ACT (Gujarat), WASSAN (AP & Telangana), PSI (Uttrakhand), and INREM (Gujarat).

[15] The canal automation has been introduced in NLBC from Head-works and below covering CCA of 29,000 ha at an estimated cost of Rs. 139.46 crore, of which the proportionate cost for automation of distributaries is estimated at Rs 58 crore. Size and scope of other projects may vary substantially and hence assuming an average CCA extent of 25,000 ha, the rate of Rs. 50 crore per project has been arrived restricting the scope of automation from farm-end up to distributaries/ branch canals.

[16] Transfer of control and management of irrigation system will also include delegation of water tax collection to respective WUAs.

activities covering functional grant (Rs.6 lakh - @ Rs.1200 per hectare), infrastructure grant (Rs.5 lakh[17]), and Agriculture Livelihoods Support Services (Rs.5 lakh[18]).Cost of training and demonstration to farmers/ WUAs will be booked separately under the Project Management (Capacity Building) component

5.4.2 During eighties, 14 numbers of 'Water And Land Management Institutes (WALMIs)' / 'Irrigation Management Training Institutes (IMTIs)' were set up under USAID assisted Water Resources Management and Training (WRM&T) Project to provide need based trainings in water and land management. However, WALMIs/ IMTIs have not been successful to the extent required due to numerous constraints, including limited and continuously declining manpower and infrastructure. Moreover, since water is common to several sectors, the role of WALMI in water education needs to be widened even further – going beyond irrigation. Accordingly, modernization and extension of WALMIs will be carried out for WALMI's holistic role in water education – *in all forms of water and to all water stakeholders* – with deeper penetration – *in terms of both coverage and content*. Besides seeking infrastructure development of the existing WALMIs, each WALMI will be targeted for creation of a minimum of three extension counters in command areas of existing projects, where its land will be utilized for demonstration of best farm practices. The WALMIs will continue to remain attached with Water Resource Departments of States, and the surplus lands and the surplus (existing) buildings of WRD in States' numerous irrigation projects will be leveraged upon for creation of extension counters. WALMIs will be restructured for greater autonomy – in *both administration and financial matters* – as well as for self sufficiency – *by appropriate value realization of its manpower, infrastructure facilities, and farm produce*. All the 14 existing WALMI's will be targeted for modernization/ extension, with an average estimate provision of Rs. 50 crore per WALMI[19]. A total of 7 new WALMIs are also proposed to be created in States where they are not in existence, with an average estimate provision of Rs. 100 crore per WALMI[20].

5.5 Project management: The key operations of the project will required synergy between the core team of Command Area Development Authority (CADA) with the irrigation/ water resources department, agriculture department, CRRI, fisheries department etc, besides needing interdisciplinary expertise to maximize development impact. The activities of project management will thus involve: (a) Creation of incremental establishment for implementation of the project by the centre as well as by

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[17] *In case of WUAs involving less than 500 ha coverage (as may be encountered in North East or Hilly areas), the infrastructure grant will be reduced proportionately.*

[18] *ALSS has been implemented successfully in 'Odisha Community Tanks Management Project (OCTMP)' covering components of Agriculture & Horticulture, Livestock, Fisheries, and Agriculture Marketing at a cost of about Rs.35 crore benefiting about 364 WUAs – i.e. average cost of Rs. 9.5 lakh per WUA. Discounting for cost of handholding support (covered as separate component), the ALSS cost is restricted to Rs. 5 lakh per WUA in ISBIG.*

[19] *Assumes establishment of 3 numbers of new extension centres (@ Rs. 15 crore each) and modernization of the existing infrastructure (Rs. 5 crore).*

[20] *Cost taken from the proposal of Andhra Pradesh for establishment of new WALMI along with an added component for extension centres.*

States; and (b) Capacity building of the Project Implementing Agencies (PIA) and Water Users Association. The incremental establishment cost will cover the cost of outsourced manpower (over and above the existing manpower), essential infrastructure, vehicles, computers etc needed for implementation of project. Costs entailed for Technical Studies/ Detailed Project Reports[21], and for visits of Monitoring Committees/ Technical Teams etc, shall also form part of the incremental establishment cost. Expenses on trainings/ workshops/ exposure visits of officials – both at national and international levels – and the expenses related to organizing of Annual Conferences on PIM will form a part of capacity building component. Expenses on training/ demonstration to WUAs/ farmers and such other miscellaneous expenses related to their team building and collective social/ economic reforms will also be covered by the capacity building component. The scope of activities under project management is elaborated further in Section 6.0 (Project Implementation Arrangement). A lump sum provision, amounting to about 2.5% of the total cost of structural and non-structural interventions, has been kept in the estimates for the project management component.

6.0 Financial Implications

6.1 The total base level cost of the Scheme at the beginning of the project (i.e in mid of FY1) is estimated to be Rs. 57,715 crore as presented in **Table-C** below. The details of 'Quantity' and 'Unit Rates' for various Scheme components used in preparation of the cost estimates of the Scheme are given in **Annexure-II** and **Annexure-III** respectively.

Table-C: Base Level Cost Estimate of Scheme at Beginning of Project

Sl. No.	Scheme Component	Unit	Quantity	Rate (Rs)	Amount (Rs Crore)
(I) STRUCTURAL INTERVENTION					
i	On Farm Development Works (OFD)	ha	56,00,000	35,000	19,600
ii	Correction of system deficiency(CSD)*	ha	178,00,000	13,000	13,090
iii	Infrastructure for micro irrigation	ha	24,00,000	50,000	12,000
iv	Installation of solar power system	ha	7,20,000	50,000	3,600
v	Pilot projects for reuse of waste water	No.	10	200,00,00,000	2,000
vi	Conjunctive use of groundwater	ha	16,80,000	9,000	1,512
vii	Pilot projects for canal automation	No.	10	50,00,00,000	500
Sub-total of Structural Intervention:					**52,302**

[21] *Consultancy cost for DPRs can be booked with retroactive effect for assignments given on or after 01/05/2017.*

(II) NON-STRUCTURAL INTERVENTION					
viii	Transfer of irrigation system to WUAs	No.	16,000	16,00,000	2,560
ix(a)	Modernization/ extension of WALMIs	No.	14	50,00,00,000	700
ix(b)	Creation of new WALMIs	No.	7	100,00,00,000	700
x(a)	Incremental Establishment in Centre	LS			200
x(b)	Incremental Establishment in States	LS			1,125
xi	Capacity building of the PIAs & WUAs	LS			128
				Sub-total of Structural Intervention:	**5,413**
				Grand Total:	**57,715**

** Cost of Correction of System Deficiency restricted to one-third of the cost of other components (i.e. On-farm development, Micro-irrigation, Solar Power, Conjunctive use, and transfer of system to WUAs)*

6.2 During state-level consultations, the need for cost escalation in the Scheme for adjustment of price inflation was raised; and it was agreed to assume the present cost estimate as the baseline estimate for FY 2017-18, and keep provision for annual cost escalation assuming a uniform escalation rate arrived by averaging the cost escalation of FY 2013-14 to FY 2016-17. However, the cost escalation has been restricted to 'Structural Interventions' only; and it has been applied one-and-half years (18 months) after the commencement of the project. Accordingly the estimate cost of the Scheme for full duration of the project has been reworked by applying an average annual inflation rate[22] of 5% on the declining balance cost of the Structural Intervention each year for the last 3 financial years of the project (i.e. FY3, FY4 & FY5) as presented in **Table-D** below. Thus arrived cost estimate of Scheme for full duration of Scheme is Rs. 61,237 Crore. The impact of cost escalation for full duration of the Scheme over and above the base level cost estimate of Structural Intervention is 6.73%; while its impact on the Grand Total cost of Scheme is 6.10%.

Table-D: Cost Estimate of Scheme for Scheme Duration

(Amount in Rs. Crore)

Sl. No	Component	Bal. Cost	Exp. FY1	Bal. Cost	Exp. FY2	Bal. Cost	Exp. FY3	Bal. Cost	Exp. FY4	Bal. Cost	Exp. FY5	Total Cost
(I) STRUCTURAL INTERVENTION												
i	OFD Works	19600.00	980.00	18620.00	3920.00	15435.00	6860.00	9003.75	5880.00	3279.94	3279.90	20919.90
ii	CSD Works	13090.00	654.50	12435.50	2618.00	10308.38	4581.50	6013.22	3927.00	2190.53	2190.50	13971.50
iii	Micro irrigation	12000.00	600.00	11400.00	2400.00	9450.00	4200.00	5512.50	3600.00	2008.13	2008.00	12808.00

[22] *Average price inflation rates for the years 2014 to 2017 have been taken as 5.93, 4.91, 5.49, and 5.16 respectively; and the average annual inflation rate of above four years is 5.37%*

iv	Solar power system	3600.00	180.00	3420.00	720.00	2835.00	1260.00	1653.75	1080.00	602.44	602.40	3842.40
v	Reuse of waste water	2000.00	100.00	1900.00	400.00	1575.00	700.00	918.75	600.00	334.69	334.70	2134.70
vi	Conjunctive use	1512.00	75.60	1436.40	302.40	1190.70	529.20	694.58	453.60	253.02	253.00	1613.80
vii	Canal automation	500.00	25.00	475.00	100.00	393.75	175.00	229.69	150.00	83.67	83.70	533.70
	Sub-Total Structural Intervention:	**52302.00**	**2615.10**	**49686.90**	**10460.40**	**41187.83**	**18305.70**	**24026.23**	**15690.60**	**8752.41**	**8752.20**	**55824.00**
(II) NON - STRUCTURAL INTERVENTION												
viii	Transfer of Irr. to WUAs	2560.00	128.00	2432.00	512.00	1920.00	896.00	1024.00	768.00	256.00	256.00	2560.00
ix(a)	Mod./ Ext. of WALMIs	700.00	35.00	665.00	140.00	525.00	245.00	280.00	210.00	70.00	70.00	700.00
ix(b)	Creation of WALMIs	700.00	35.00	665.00	140.00	525.00	245.00	280.00	210.00	70.00	70.00	700.00
x(a)	Inc. Est. in Centre	200.00	10.00	190.00	40.00	150.00	70.00	80.00	60.00	20.00	20.00	200.00
x(b)	Inc. Est. in States	1125.00	56.25	1068.75	225.00	843.75	393.75	450.00	337.50	112.50	112.50	1125.00
xi	Cap. building of PIA/WUA	128.00	6.40	121.60	25.60	96.00	44.80	51.20	38.40	12.80	12.80	128.00
	Sub-Total Non-Str. Intervention	**5413.00**	**270.65**	**5142.35**	**1082.60**	**4059.75**	**1894.55**	**2165.20**	**1623.90**	**541.30**	**541.30**	**5413.00**
	Grand Total:	**57715.00**	**2885.75**	**54829.25**	**11543.00**	**45247.58**	**20200.25**	**26191.43**	**17314.50**	**9293.71**	**9293.50**	**61237.00**

6.3 The cost proportion of Special States (Himalayan States and North Eastern States) is taken as 7.20% of the cost components for OFD works, CSD works, micro-irrigation, solar power, conjunctive use, transfer of irrigation system to WUAs, and incremental establishment cost. The Central component will cover the cost of CPMU establishment and its activities; and since the North Eastern Regional Institute of Water and Land Management (NERIWALM) is under the administrative control of Ministry of WR, RD & GR, its cost of modernization/ extension will also be booked under Central component of the Scheme. Thus arrived proportion of overall Scheme cost amongst Special States, Other General States[23], and Central component is presented in **Table-E** below:

Table-E: Special States', Other States', & Central Component's Cost Proportion

(Amount in Rs. Crore)

Sl. No	Scheme Component	Special States	General States	Central Component	Total
(I) STRUCTURAL INTERVENTION					
i	OFD Works	1506.23	19413.67	0.00	20919.90
ii	CSD Works	1005.95	12965.55	0.00	13971.50
iii	Micro irrigation	922.18	11885.82	0.00	12808.00
iv	Solar power system	276.65	3565.75	0.00	3842.40
v	Reuse of waste water	0.00	2134.70	0.00	2134.70

[23] *Study carried out for the Preliminary Concept Paper indicates that benefits given to the general category states are further disseminated (in terms of cost proportion) to the special zones demarcated under Drought Prone Area Programme (DPAP) (14.42%), Desert Development Programme (DDP) (10.18%), Left Wing Extremism affected areas (LWE) (3.27%), and Tribal areas (TA) (1.48%).*

vi	Conjunctive use	116.19	1497.61	0.00	1613.80
vii	Canal automation	0.00	533.70	0.00	533.70
Sub-Total Str. Intervention:		**3827.20**	**51996.80**	**0.00**	**55824.00**
(II) NON - STRUCTURAL INTERVENTION					
viii	Transfer of Irr. to WUAs	184.32	2375.68	0.00	2560.00
ix(a)	Mod./ Ext. of WALMIs	0.00	650.00	50.00	700.00
ix(b)	Creation of WALMIs	300.00	400.00	0.00	700.00
x(a)	Inc. Est. in Centre	0.00	0.00	200.00	200.00
x(b)	Inc. Est. in States	81.00	1044.00	0.00	1125.00
xi	Cap. building of PIA/WUA	8.64	111.36	8.00	128.00
Sub-Total Non-Str. Interv:		**573.96**	**4581.04**	**258.00**	**5413.00**
Grand Total:		**4401.16**	**56577.84**	**258.00**	**61237.00**

7.0 Cost Sharing & Mode of Funding

7.1 Besides the cost of Central component, a part of the State component cost will also be shared by the Central Government for this Centrally Sponsored Scheme. Barring the activity of modernization/ extension/ creation of WALMIs/ IMTIs, eligible costs of all other activities of the scheme will be shared by the Central Government as per existing cost sharing provisions (for new centrally sponsored schemes[24]) applied at aggregate level of the whole Scheme. Thus at aggregate level of the Scheme, the Central Assistance (CA) to States for all components except WALMIs will be restricted as per cost sharing ratio of 90:10 (Centre:State) in case of projects in Himalayan and North Eastern States (i.e. Special States), and 60:40 (Centre:State) in case of projects in other (i.e. General) States.

7.2 The modernization/ extension of existing WALMIs/ IMTIs as well as creation of new WALMIs will entail one-time capital cost for creation of infrastructure, and the additional recurring operational cost – including substantial costs of faculties. Only the capital cost of project will be covered under the scheme, while the entire burden of recurring cost will have to be borne by the States; and an upfront commitment in this regard will have to be given by the States by way of MoUs. Further, the unutilized land and existing infrastructure of the Water Resource Departments will be made available by the States for the extension counters and new WALMIs; and such costs of the capital component will not be booked under the scheme. Considering above, the Central Assistance (CA) for modernization/ extension/ creation of WALMIs will be as per cost sharing ratio of 90:10 (Centre:State)[25].

7.3 The total cost of burden of the Central Government will be Rs. 38,480.75 crore, covering the Central Component (Rs. 258.00 crore) and the Central Assistance part

[24] *as per provisions contained in Department of Expenditure, Ministry of Finance D.O. No.32/PSO/FS/2015 Dated 28/10/2015*

[25] *Proposal is also in line with the recommendations of the Sub-committee-C constituted by the Ministry of Drinking Water & Sanitation for 'Revitalization of WALMI Aurangabd as Pilot for Reorienting Water Sector Employees'.*

(Rs.38,222.75 crore), while the cost burden of State Governments will be Rs.22,756.25 crore, as per details given in **Table-F** below. While processing the case for EFC's approval, the details of individual State's share cost burden[26] will be shared in parallel with the respective State governments for confirmation (with concurrence of their respective Finance Departments) of their participation extent.

Table-F: Central & States Share in Scheme Cost

(Amount in Rs. Crore)

Sl. No.	Category	Total Cost	Central Share	State Share	Extent of Central Sharing
1	Projects (excluding WALMIs) in Special States	4101.16	3691.05	410.12	90%
2	Projects (excluding WALMIs) in General States	55527.84	33316.70	22211.13	60%
3	Modernization/ Extension/ Creation of WALMIs/IMTIs (excluding NERIWALM)	1350.00	1215.00	135.00	90%
Sub-Total States' Component:		**60979.00**	**38222.75**	**22756.25**	
4	Central Component	258.00	258.00	0.00	100%
Grand Total		**61237.00**	**38480.75**	**22756.25**	

7.4 At the level of individual project, the CA will be varied so as to provide 'performance linked incentivization' based on performance criteria of: (i) Before-time completion; (ii) Increased water use efficiency; and (iii) Success of PIM. Incentivization will be applied on all components of States' projects excluding modernization/ extension/ creation of WALMIs. The incentivization shall be regulated through the 'Guidelines for Central Assistance under ISBIG' in a manner so as to generate competitiveness amongst projects.

7.5 The Scheme will essentially source the Long Term Irrigation Fund (LTIF) operated through the special window created in NABARD. For the Central share, the funds will be borrowed from NABARD as per year-wise requirements through the channel of National Water Development Agency (NWDA), which is a society under the administrative control of MoWR,RD&GR. For the State share, the desirous States may also access the special window of NABARD in case of their inability to fund the project through own resources.

7.6 The Central Assistance, in respect of each project, will be given in instalments – with 10% of the central share of a project cost given in advance, and balance given as reimbursement on submission of Interim Unaudited Financial Reports (IUFR) by the

[26] *Projects for 'Reuse of waste water' and 'Canal Automation' proposed on pilot basis are limited in numbers, and hence tentatively proposed for select States only.*

PIAs every quarter[27]. The Advance of 10% will be adjusted against the last IUFR and the incentives which would be given on completion of project.

8.0 Project Implementation Arrangements

8.1 This is a Centrally Sponsored Scheme, where all the targeted activities are to be completed essentially by the State Project Implementing Agencies (PIA) as part of State-component. The overall project supervision, coordination and oversight will be done by the CADWM Wing of the Ministry of WR, RD & GR, wherein a Central Project Management Unit (CPMU) will be established for this purpose. In addition to expenditure related to CPMU, the cost of modernization and extension of the NERIWALM – which is under the administrative control of the Ministry of WR, RD & GR – will form the part of Central-component.

8.2 The Command Area Development Authority (CADA) of the States, wherever they are in existence, will be construed as PIA. In other cases, the Water Resources Departments, Public Works Departments, or Public Health Engineering Department of the State (as the case may be) will be the PIA. Scheme will encourage creation of CADA (wherever not in existence) as well as strengthening of existing CADA, and the incremental establishment expenditure towards such intent can be booked under the Project Management component.

8.3 Scheme will be implemented by the State as per prevalent organizational procedures and delegation of powers of the State governments. However for the monitoring/ oversight, guidance and coordination of the projects, each PIA will have a State Project Management Unit (SPMU) headed by a Project Director with sufficient and competent staff. Any shortfall in manpower within SPMU can be outsourced by booking the incremental establishment cost under Project Management component of the PIA. The SPMU will be responsible for processing all cases of respective State with the CPMU/ CWC Office, including approvals of DPRs, timely submission of IUFRs, compliance of technical/ managerial advice, timely audit, submission of monitoring information, evaluation of project etc. Each project of the State will have a nodal officer of the rank of Superintending Engineer, who will be responsible for ensuring time-bound progress of the project, and for timely updating of physical and financial progress information on the ISBIG website. States will also engage sufficient numbers of Social Facilitators[28] for guiding WUAs towards successful and sustainable PIM; and the cost entailed on this account will be booked under State's Project Management component.

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[27] *Since money will be essentially arranged by NABARD through market borrowings, possibility for reimbursement on monthly basis will be explored adopting the 'just-in-time' approach.*

[28] *A Social Facilitator may be an NGO, or similar entity, having substantial experience in influencing village level social activities and reforms; they will render service as per TOR and payment made to them will be linked to the specified deliverables.*

8.4 CPMU will be supported by a team of experts form a Technical and Management Consulting Firm hired on time-basis consultancy. The Consultant will also have sub-units in some of the States for enhancing field level penetration, which will operate from regional offices of CWC while also extending support to CWC's CAD Cells engaged on the Scheme. CPMU will also hire the services of an organization/ institute of repute working in the area of Social Sciences for rendering assistance in empanelment and management of Social Facilitators. Cost of hiring the services of consultant and Social Sciences Institute/ organization will be borne by the Central Government as part of Project Management component.

8.5 The projects under the Scheme will be implemented as per scope contained in the MoUs signed for each project and as per the 'Guidelines for Central Assistance under ISBIG' issued and updated by CPMU from time to time. The MoU, in respect of each CADWM project and each WALMI proposal, will be signed by CPMU on receipt of Detailed Project Report (DPR) jointly prepared by SPMU and CAD Cell of the respective CWC Regional office, and forwarded by Project Management Organization (PMO)[29] of CWC with its recommendation for inclusion. As agreed during the State level consultation process held in April 2017, the timelines for preparation of DPRs are set with effect from 01/05/2017; the Consultancy cost (if any) for preparation of DPRs can be booked under State's Project Management component with retroactive effect (if approved); and the agreed timelines for preparation and submission of DPRs are as below:

a) OFD Works: 3 months
b) Conjunctive use of groundwater: 4 months
c) Correction of system deficiency: 5 months
d) Micro-irrigation including solar power system: 6 months
e) Modernization/ extension/ creation of WALMIs 6 months
f) Canal automation: 8 months
g) Reuse of waste water: 8 months

8.6 Impetus to PIM process will be given by involving Social Sciences Institute/ organization and select Social Facilitators seeking following objectives:

a) facilitate capacity building and promote effective functioning of WUAs and enable them to perform their roles effectively and responsibly for improving the distribution, operation and maintenance of irrigation system with efficiency and equity;

b) facilitate and improve interaction and clarity in functions among the WUA members and departmental functionaries from Irrigation, Agriculture and Rural Development;

[29] *In case of WALMI proposals, the recommendations of the National Water Academy (NWA), instead of PMO, will be required.*

c) bring water use efficiency by mobilising, coordinating, planning and monitoring support, and facilitate training and capacity building for behaviour changes;

d) promote cooperative farming for bringing cost efficiency in micro-irrigation (e.g. pivots), farm-mechanization, and other farm inputs; and for improving their capacities in storing, transporting and marketing of farm produce;

e) facilitate implementation of 'Agriculture Livelihoods Support Services (ALSS)' and the conjunctive use of groundwater;

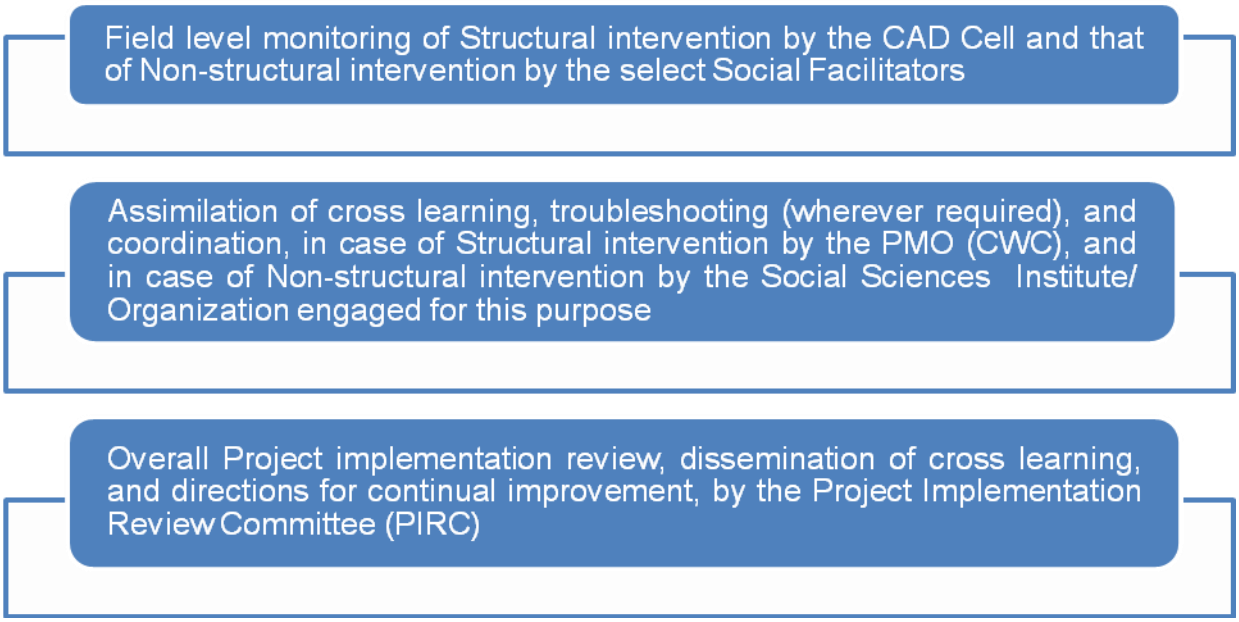
f) assess performance of WUAs and be a part of the feedback loop and drive the spirit of continuous improvement.

8.7 The capacity building of the PIAs will be ensured through national/ international trainings and workshops. The trainings/ demonstrations for benefits of farmers/ WUAs will also be held extensively with the support of Social Facilitators, Social Sciences Institute/ organization, IndiaN PIM, WALMIs and NWA. The 'National Conference on Participatory Irrigation Management' will also be organized as an annual event in different States for greater penetration and collaboration of efforts towards successful PIM. Expenditure for above activities along with cost of other IEC activities will be booked by the Centre and respective States under Project Management component.

8.8 The flow of funds for the 'Central Assistance (CA)' will be through the National Water Development Agency (NWDA), as per existing arrangements made for the implementation of prioritized AIBP projects, without entailing any extra staff requirement.

9.0 Project Monitoring & Evaluation

9.1 Monitoring of CAD implementation will be carried out with the intent of continual improvement through a three-tier Monitoring System as presented below:



9.2 Zone level Project Implementation Review Committee (PIRC) with representations from Project Authorities, CAD Cell, PMO(CWC), Social Sciences Institute/ organization, IndiaNPIM, and WALMIs will be constituted for the four regions, namely: North & North-East, West, Central, and South regions. A National Level Steering Committee, under chairmanship of Secretary, Ministry of WR, RD &GR, and involving Chairman-CWC, Principal Secretaries of State Departments will also be constituted for overall guidance of the Scheme and for resolution of major hurdles, if any.

9.3 The Council headed by CEO, NITI Ayog constituted for monitoring of the 99 prioritized projects will also monitor the implementation of the proposed Scheme, and also address the policy matters.

9.4 Central component of the Scheme will have the CAG audit, while State component will have audits of the State AGs.

9.5 On completion of the Scheme, an 'Evaluation and Impact Study' will be under taken, which will also include component of Social Audit.

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ANNEXURE-I

State-wise List of Targeted Projects and Total/ Outstanding CCA Extent

Sl. No.	Name of Project	Name of State	Total CCA (Thousand Hectare)	Balance CCA (Thousand Hectare)
1	Annamayya	Andhra Pradesh	4.144	4.144
2	Somasila	Andhra Pradesh	31.301	31.301
3	Madduvalasa	Andhra Pradesh	10.000	10.000
4	Veligallu	Andhra Pradesh	9.712	9.712
5	Swarnamukhi	Andhra Pradesh	4.656	4.656
6	Konam Reservoir	Andhra Pradesh	5.115	5.115
7	Gajuladinne Project	Andhra Pradesh	9.863	9.863
8	Thammilleru Reservoir Project	Andhra Pradesh	3.711	3.711
9	Yogivemana Reservoir Project	Andhra Pradesh	5.212	5.212
10	Handri Niva Srujula Srawanti Project	Andhra Pradesh	80.130	80.130
11	Narayanpuram Anicut	Andhra Pradesh	14.995	14.995
12	Vottigedda	Andhra Pradesh	6.746	6.746
13	Vengalarya Sagaram Project	Andhra Pradesh	9.996	9.996
14	Andra	Andhra Pradesh	3.603	3.603
15	Raiwada	Andhra Pradesh	6.210	6.210
16	Surampalam	Andhra Pradesh	4.676	4.676
17	chagalnadu	Andhra Pradesh	14.164	14.164
18	Bhupathipalem	Andhra Pradesh	4.664	4.664
19	Kovada Kalva	Andhra Pradesh	7.176	7.176
20	Tharaka Rama Sagaram	Andhra Pradesh	5.592	5.592
21	Korisapadu	Andhra Pradesh	8.093	8.093
22	Vellala LIS	Andhra Pradesh	1.831	1.831
23	Marella IV LIS	Andhra Pradesh	1.808	1.808
24	Chinthamore LIS	Andhra Pradesh	1.198	1.198
		Total for Andhra Pradesh	254.596	254.596
25	CADWM Project to bridge the gap of 7035 Ha.(421 nos. MI schemes) in Namsai Circle	Arunachal Pradesh	7.035	7.035
26	CADWM Project to bridge the gap of 5845 Ha.(486 nos. MI schemes) in Itanagar Circle	Arunachal Pradesh	5.845	5.845
27	CADWM Project to bridge the gap of 5742 Ha.(633 nos. MI schemes) in Daporijo Circle	Arunachal Pradesh	5.742	5.742
28	CADWM Project to bridge the gap of 3378 Ha.(269 nos. MI schemes) in Jameri Circle	Arunachal Pradesh	3.378	3.378
		Total for Arunachal Pradesh	22.000	22.000
29	Maloibari*	Assam	2.200	1.450
30	Bordikarai*	Assam	15.294	13.440
31	Pahumara Irrigation *	Assam	9.259	7.734
32	Sukhajai FIS	Assam	1.450	1.450
33	CM Dutta Bund FIS	Assam	2.655	2.655
34	Kulsik FIS	Assam	1.990	1.990
35	Buriganga FIS	Assam	1.500	1.500
36	Bhumki FIS	Assam	4.000	4.000
37	Kapili FIS	Assam	0.950	0.950
38	Singra FIS	Assam	1.271	1.271
39	Ubhoti FIS	Assam	1.200	1.200
40	Medhipara FIS	Assam	1.200	1.200

41	Barua Pathar FIS	Assam	1.000	1.000
42	Singua FIS	Assam	1.500	1.500
43	Ghagua FIS	Assam	0.985	0.985
		Total for Assam	46.454	42.325
44	Gandak*	Bihar	960.000	305.115
45	Badua *	Bihar	35.550	5.493
46	North Koel Project*	Bihar	115.000	104.551
47	Chandan*	Bihar	68.087	19.702
48	Kiul*	Bihar	22.260	5.625
49	Sone*	Bihar	699.000	199.175
50	Orni Reservoir	Bihar	9.110	9.110
51	Bilasi Reservoir	Bihar	3.200	3.200
52	Upper Kiul	Bihar	16.667	16.667
53	Eastern Kosi (ERM)	Bihar	612.000	172.000
54	Bateshwar Asthan	Bihar	22.568	22.568
55	Uderasthan	Bihar	41.890	41.890
56	Kundghat	Bihar	2.036	2.036
		Total for Bihar	2607.368	907.132
57	Tandula*	Chhattisgarh	101.000	9.600
58	Mahanadi Res. Pr.*	Chhattisgarh	276.000	83.000
59	Kodar	Chhattisgarh	16.750	3.400
60	Matia Moti Tank	Chhattisgarh	5.000	5.000
61	Saroda Tank	Chhattisgarh	7.350	7.350
62	Chirpani	Chhattisgarh	7.000	7.000
		Total for Chhattisgarh	413.100	115.350
63	Jhuj	Gujarat	2.907	2.907
64	Sukhi	Gujarat	25.000	25.000
65	Watrak	Gujarat	16.000	16.000
66	Aji-IV	Gujarat	3.338	3.338
67	Ozat-II	Gujarat	4.918	4.918
68	Bhadar-II	Gujarat	9.704	9.704
		Total for Gujarat	61.867	61.867
69	Bhakra Canal Command Project (BCC), Ph-II*	Haryana	351.853	107.675
70	Western Jamuna Canal Command (WJC),Ph-VI*	Haryana	205.600	73.144
71	Jawahar Lal Nehru (JLN) Canal Command Phase –II (Lift Irrigation Scheme)*	Haryana	99.383	88.704
72	Bhakra Canal Command Project (BCC), Ph-III)	Haryana	245.300	245.300
73	Western Jamuna Canal Command (WJC), Ph-VII	Haryana	193.936	193.936
74	Jawahar Lal Nehru (JLN) Canal Command Phase –III (Lift Irrigation Scheme)	Haryana	96.751	96.751
75	Siwani Canal Command	Haryana	89.465	89.465
76	Loharu Canal Command	Haryana	85.752	85.752
		Total for Haryana	1368.040	980.727
77	Shah Nahar Project*	Himachal Pradesh	15.287	11.900
78	Sidhatha Med Project*	Himachal Pradesh	3.200	3.150
79	Changer Lift Irr. Project	Himachal Pradesh	3.041	3.041
80	Nadaun area med Irrigation project	Himachal Pradesh	2.980	2.980
81	Med Irrigation Project Ballah Valley left bank	Himachal Pradesh	2.780	2.780
82	CAD of 23 MI schemes	Himachal Pradesh	3.645	3.645
		Total for Himachal Pradesh	30.933	27.496
83	Ganderbal*	Jammu & Kashmir	6.892	2.162
84	Sonawari *	Jammu & Kashmir	20.370	14.662

85	Vaishow Command Project *	Jammu & Kashmir	13.738	7.811
86	Uri-Narvaw Project *	Jammu & Kashmir	6.770	0.392
87	Ramban Cluster*	Jammu & Kashmir	2.670	2.659
88	Rajouri Cluster*	Jammu & Kashmir	4.048	4.048
89	Kistwar Cluster*	Jammu & Kashmir	4.853	4.853
90	Pargwal canal *	Jammu & Kashmir	2.360	2.360
91	Udhampur Cluster*	Jammu & Kashmir	6.593	6.593
92	Mod. Of Mav Khul	Jammu & Kashmir	2.547	2.547
93	Arapath	Jammu & Kashmir	33.825	33.825
94	Rambiara Romshi	Jammu & Kashmir	20.202	20.202
95	Aripal Tral	Jammu & Kashmir	5.620	2.567
96	Rambiara Romshi	Jammu & Kashmir	14.054	14.054
97	Zainpora	Jammu & Kashmir	6.101	6.101
98	Devsar	Jammu & Kashmir	15.333	15.333
99	Shaliganga doodganga	Jammu & Kashmir	10.159	10.159
100	Lar sukhnag	Jammu & Kashmir	13.305	13.305
101	Ningli amargarh	Jammu & Kashmir	14.510	14.510
102	Sind valley	Jammu & Kashmir	11.066	11.066
103	Puhroo kupwara	Jammu & Kashmir	23.230	23.230
104	Gurez valley	Jammu & Kashmir	1.465	1.465
105	DIP Jammu	Jammu & Kashmir	8.908	8.250
106	DIP Samba	Jammu & Kashmir	4.200	4.200
107	DIP Kathua	Jammu & Kashmir	15.701	15.701
108	DIP Udhampur	Jammu & Kashmir	6.963	6.138
109	DIP Reasi	Jammu & Kashmir	9.788	9.788
110	DIP Doda	Jammu & Kashmir	2.559	2.559
111	DIP Kishtwar	Jammu & Kashmir	7.789	7.601
112	DIP Ramban	Jammu & Kashmir	3.355	3.181
113	DIP Rajhouri	Jammu & Kashmir	8.630	8.264
114	DIP Poonch	Jammu & Kashmir	4.364	4.364
		Total for Jammu & Kashmir	311.968	283.950
115	Kanchi Weir Scheme*	Jharkhand	17.800	17.800
116	Mayurakshi Left Bank Canal System*	Jharkhand	6.000	6.000
117	Harna Weir Scheme	Jharkhand	2.900	2.900
118	Sundar Reservoir	Jharkhand	8.500	8.500
119	Triveni Weir Scheme	Jharkhand	2.130	2.130
		Total for Jharkhand	37.330	37.330
120	Malaparaba*	Karnataka	220.060	4.973
121	Tungbhadra*	Karnataka	362.180	8.180
122	Amarja*	Karnataka	8.903	3.802
123	Ghataprabha*	Karnataka	29.000	13.062
124	Singatalur	Karnataka	67.584	23.430
125	Hippargi	Karnataka	74.742	23.660
126	Markandeya	Karnataka	19.105	3.410
127	Hemavathy	Karnataka	283.286	75.500
128	Varahi	Karnataka	15.702	4.960
		Total for Karnataka	1080.562	160.972
129	Kanhirapuzha*	Kerala	9.710	2.080
130	Kallada *	Kerala	53.514	15.610
		Total for Kerala	63.224	17.685
131	Guruma*	Madhya Pradesh	7.181	2.441
132	Kolar *	Madhya Pradesh	45.000	21.100

133	Rani Avanti Bai(Bargi)*	Madhya Pradesh	157.000	75.700
134	Mohanpura Project	Madhya Pradesh	133.100	133.100
135	Pancham Nagar	Madhya Pradesh	25.000	25.000
136	Rajghat Canal Project*	Madhya Pradesh	164.789	56.795
137	Chambal Project	Madhya Pradesh	360.000	140.000
138	Jamuniya	Madhya Pradesh	10.300	10.300
139	Ramnagar	Madhya Pradesh	20.000	20.000
140	Bansujara	Madhya Pradesh	75.000	75.000
		Total for Madhya Pradesh	997.370	559.436
141	Bahula	Maharashtra	5.454	3.182
142	Gul	Maharashtra	3.708	2.214
143	Rangawali Med. Proj	Maharashtra	5.130	1.316
144	Karwand	Maharashtra	8.695	1.183
145	Jam Pro.	Maharashtra	8.430	2.998
146	Arunavati	Maharashtra	24.135	14.224
147	Adan Med.Pro.	Maharashtra	9.999	6.038
148	Lower Pus Med.Pro..	Maharashtra	8.706	4.258
149	Borgaon Med.Pro.	Maharashtra	3.328	2.595
150	Saikheda.Mrd.Pro.	Maharashtra	3.895	1.322
151	Waghadi Med Pro.	Maharashtra	8.728	5.503
152	Goki Med.Pro.	Maharashtra	9.270	5.215
153	Pentakali	Maharashtra	10.700	4.891
154	Utawali	Maharashtra	3.740	2.031
155	Sapan	Maharashtra	6.134	5.709
156	Chandarbhaga	Maharashtra	7.013	0.862
157	Shahanoor Pro.	Maharashtra	9.330	4.755
158	Hetwane	Maharashtra	9.932	0.920
159	Darana	Maharashtra	88.625	11.000
160	Giraja	Maharashtra	5.628	3.447
161	Tiru	Maharashtra	2.625	1.067
162	Bhatasa	Maharashtra	29.378	3.119
163	Surya	Maharashtra	18.323	5.558
164	Purna	Maharashtra	78.486	33.239
165	Kukadi project	Maharashtra	224.697	39.201
166	Bhima (Ujjani) Project*	Maharashtra	199.103	15.599
167	Tembhapuri Med Project	Maharashtra	5.258	4.780
168	Upper Dudhna Project	Maharashtra	5.283	3.401
		Total for Maharashtra	803.733	189.627
169	Cluster of 125 MI schemes *	Manipur	9.043	7.350
170	Cluster of 169 MI schemes *	Manipur	9.766	8.011
171	Cluster of 213 MI schemes *	Manipur	10.659	8.458
172	Cluster of 823 MI schemes	Manipur	22.086	22.086
173	Cluster of 851 MI schemes	Manipur	17.171	17.171
174	Cluster of 782 MI schemes	Manipur	14.547	14.547
		Total for Manipur	83.272	77.623
175	Cluster of 13 M.I. Projects at Changki Valley*	Nagaland	1.080	1.007
		Total for Nagaland	1.080	1.007
176	Potteru*	Odisha	70.100	7.000
177	Titlagarh St-II(KBK)	Odisha	2.200	1.700
178	Mahanadi delta I*	Odisha	167.000	14.520

179	Mahanadi delta II*	Odisha	136.000	10.000
180	Rushikulya*	Odisha	61.230	7.450
181	Salandi Right*	Odisha	40.180	12.560
182	Baitarani*	Odisha	32.770	7.000
183	Hariharjore	Odisha	9.450	9.450
184	Upper Suktel	Odisha	1.350	1.350
185	Aunli	Odisha	1.750	1.750
186	Derjang	Odisha	7.580	7.580
187	Baghua I & II	Odisha	8.360	8.360
188	Harabhangi	Odisha	9.850	9.850
189	Hiradharbati	Odisha	6.310	6.310
190	Upper Jonk	Odisha	11.130	11.130
191	Dhanei and extension	Odisha	4.510	4.510
192	Bahuda	Odisha	8.070	8.070
193	Badanala	Odisha	9.870	9.870
194	Uttei	Odisha	9.630	9.630
195	Sunder	Odisha	5.080	5.080
196	Saipala	Odisha	2.750	2.750
197	Dumerbahal	Odisha	2.800	2.800
198	Jharbandh	Odisha	2.130	2.130
199	Khadakhai	Odisha	7.990	7.990
200	Baldiha	Odisha	3.830	3.830
201	Kalo	Odisha	4.900	4.900
202	Bagh Barrage	Odisha	10.870	10.870
203	Baghalati	Odisha	5.470	3.760
204	Rengali Left Canal	Odisha	41.130	13.200
205	Rengali Right Canal	Odisha	17.200	15.880
206	Manjore	Odisha	6.780	5.500
207	Upper Indravati	Odisha	75.000	11.000
		Total for Odisha	783.270	237.780
208	Bhatinda Br Part-II*	Punjab	181.707	37.125
209	Sirhind Feeder Part-II Command Project*	Punjab	314.496	57.625
210	Ghaggar*	Punjab	178.000	77.801
211	Bist Doab*	Punjab	155.085	155.085
212	Kandi Canal Phase-I*	Punjab	19.867	19.867
213	Upper Bari Doab Canal Command*	Punjab	274.800	239.608
214	Kotla Branch Part-II	Punjab	266.339	94.811
215	Banur Canal System	Punjab	14.000	14.000
216	Sidhwan	Punjab	116.661	59.247
217	Bhakra Main Line (BML)	Punjab	321.853	321.853
218	Abohar	Punjab	124.397	71.821
219	Eastern Canal Part-II	Punjab	100.414	100.414
		Total for Punjab	2067.619	1249.257
220	Dev of pres. Irrign. in 6 Lift schemes of IGNP-II*	Rajasthan	347.566	317.017
221	Chambal*	Rajasthan	229.000	77.758
222	Amar Singh Sub-Branch and Jassana district of Bhakra canal System.*	Rajasthan	50.835	18.000
223	Sidhmukh Nohar*	Rajasthan	111.460	10.420
224	Bhakra Canal project-I*	Rajasthan	113.420	108.980
225	Bisalpur Project*	Rajasthan	65.100	25.047
226	Chhapi	Rajasthan	6.991	7.552

227	Panchana	Rajasthan	6.106	9.985
228	Gambhiri (Modernisation)	Rajasthan	7.599	7.599
229	Chauli	Rajasthan	8.963	5.132
230	Mahi	Rajasthan	20.000	20.000
231	Jawai	Rajasthan	38.671	38.671
232	Bhakra Canal Phase-II	Rajasthan	179.138	179.138
		Total for Rajasthan	1184.849	825.299
233	Manimuktha Nathi System*	Tamil nadu	16.131	8.603
234	Kalingarayan Anicut *	Tamil nadu	4.800	0.864
235	Ellis Anicut Project*	Tamil nadu	5.230	0.860
236	Cheyyar Anicut*	Tamil nadu	7.952	2.550
237	Pelanduarai Anicut*	Tamil nadu	6.980	2.110
238	Kudhiraiyar Reservoir Project*	Tamil nadu	2.474	1.274
239	Kelavarapalli Reservoir Project*	Tamil nadu	3.020	1.420
240	Kalingalar Nichabanadhi project*	Tamil nadu	6.460	4.260
		Total for Tamil Nadu	53.047	21.941
241	Priyadarshini Jurala	Telangana	40.160	8.796
242	Nagarjunsagar	Telangana	27.944	19.615
243	Gundalavagu	Telangana	1.045	1.045
244	Alisagar LIS	Telangana	21.770	6.740
245	Guthpa LIS	Telangana	15.698	7.606
246	AMRPSLBC	Telangana	89.033	89.033
247	M.Bagareddy Singur	Telangana	12.145	4.047
248	Dindi	Telangana	5.196	5.196
249	Nizamsagar	Telangana	93.660	13.663
250	R.D.S	Telangana	35.425	26.006
251	Kaddam Project	Telangana	27.591	12.114
252	Musi	Telangana	12.769	4.267
253	Asifnahar	Telangana	6.172	5.189
254	Kotipallyvagu	Telangana	3.724	1.498
255	Ghanapur Anicut	Telangana	8.755	1.966
256	Pocharam	Telangana	4.251	1.545
257	Koulasanala	Telangana	3.643	1.619
258	Swarna	Telangana	3.621	2.221
259	Vottivagu	Telangana	9.919	3.320
260	N.T.R Sagar	Telangana	2.429	1.620
261	PP Rao Project	Telangana	4.453	1.417
262	Sathnala	Telangana	9.716	6.356
263	Upper Manair	Telangana	5.297	3.071
264	Shanigaram	Telangana	2.064	1.113
265	Pakhala Lake	Telangana	7.365	2.914
266	Gaddennavagu (Suddavagu)	Telangana	5.668	5.668
267	Taliperu	Telangana	9.996	3.116
268	Nallavagu	Telangana	2.440	1.035
		Total for Telangana	471.949	241.796
269	Saryu Canal System Phase-II*	Uttar Pradesh	280.000	217.445
270	Tumaria dam canal System*	Uttar Pradesh	76.000	29.797
271	Sarda Canal Project *	Uttar Pradesh	1613.000	105.549
272	Betwa & Gursarai Canal *	Uttar Pradesh	422.000	55.953
273	Ken Canal System *	Uttar Pradesh	222.000	33.884
274	Belan Pump Canal System*	Uttar Pradesh	71.050	7.260
275	Son Pump Canal System*	Uttar Pradesh	95.000	25.620

276	Madhya Ganga Canal*	Uttar Pradesh	229.000	81.106
277	Sirsi dam Project*	Uttar Pradesh	44.880	6.210
278	Sharda Shayak Canal System p-II*	Uttar Pradesh	330.000	229.365
279	East Ganga Canal *	Uttar Pradesh	233.000	106.725
280	Upper Ganga Canal*	Uttar Pradesh	457.000	3.493
281	Providing Kharif Channel in H.K. Doab	Uttar Pradesh	11.040	11.040
282	Gunta Nala Dam	Uttar Pradesh	3.880	3.880
283	Upper Rajghat Canal	Uttar Pradesh	43.353	43.353
		Total for Uttar Pradesh	4131.203	960.680
284	Jakhan, Rajpur, Bijapur canal systems	Uttarakhand	7.466	7.466
285	Kalanga canal system & Cluster of 10 no of M.I. schemes at Doiwala	Uttarakhand	7.446	7.446
286	Kata pather canal system & Cluster of 12 no of M.I. schemes at Sahaspur	Uttarakhand	4.783	4.783
287	Cluster of 205 no of M.I. schemes at Chakrata	Uttarakhand	3.526	3.526
288	Cluster of 52 no of M.I. schemes at Kalsi	Uttarakhand	1.112	1.112
289	Cluster of 112 no of M.I. schemes	Uttarakhand	3.259	3.259
290	Cluster of 50 no of M.I. schemes	Uttarakhand	1.851	1.851
291	Jagjitpur canal system	Uttarakhand	2.647	2.647
292	Off-take canal system Haridwar	Uttarakhand	3.515	3.515
293	Canal system at Laldhang Haridwar	Uttarakhand	3.698	3.698
294	Off-take canal system at Roorkee	Uttarakhand	4.428	4.428
295	Belgad, chilkiya, Ramnagar canal systems	Uttarakhand	7.181	7.181
296	Lalkuwan canal System	Uttarakhand	1.944	1.944
297	Golapaar, Chorgalia & Golavaar Canal Sys.	Uttarakhand	2.311	2.311
298	Cluster of 185 no of M.I. schemes	Uttarakhand	4.942	4.942
299	Cluster of 95 no of M.I. schemes	Uttarakhand	2.338	2.338
300	Haripura Canal System	Uttarakhand	11.134	11.134
301	Baur Canal System	Uttarakhand	6.571	6.571
302	Haldi-Tarai Canal System	Uttarakhand	9.498	9.498
303	Upper Begul Canal system	Uttarakhand	4.629	4.629
304	Katna Canal System	Uttarakhand	2.641	2.641
305	Nanakmatta Canal System	Uttarakhand	3.421	3.421
306	Khatima Canal System	Uttarakhand	3.978	3.978
307	Lohiya Canal System	Uttarakhand	1.538	1.538
308	Cluster of 103 no of M.I. schemes	Uttarakhand	2.655	2.655
309	Cluster of 102 no of M.I. schemes	Uttarakhand	2.101	2.101
310	Cluster of 173 no of M.I. schemes	Uttarakhand	4.949	4.949
311	Cluster of 42 no of Lift Irrigation Schemes	Uttarakhand	2.001	2.001
312	Cluster of 36 no of Lift Irrigation Schemes	Uttarakhand	1.568	1.568
313	Cluster of 51 no of Lift Irrigation Schemes	Uttarakhand	0.939	0.939
314	Cluster of 44 no of Lift Irrigation Schemes	Uttarakhand	1.376	1.376
		Total for Uttarakhand	121.446	121.446
315	Mayurakshi*	West Bengal	226.630	194.141
316	D.V.C System*	West Bengal	344.700	293.213
317	Kangsabati*	West Bengal	269.900	184.442
		Total for West Bengal	841.230	671.796
		Grand Total for All States (in Thousand Hectares)	17837.510	8069.118
		Grand Total Rounded-off in Lakh Hectares	**178**	**80**

****CADWM projects already included under 12th Plan***

ANNEXURE-II

Total Extent/ Quantum of Structural & Non-structural Interventions

(1) OFD works (Component i) & Micro-irrigation works (component iii):

Total balance CCA of the 317 projects targeted for CADWM works under this scheme is 80 lakh ha. Out of this targeted CCA, 70% extent (i.e 56 Lakh ha) will be covered by OFD works, and balance 30% extent (24 Lakh ha) will be covered by Micro-irrigation works.

(2) System Deficiency Correction (component ii):

The coverage of 'System deficiency correction' will extend to complete command area of the 317 projects included in this scheme totalling a CCA of 178 Lakh ha.

(3) Installation of solar power system for micro-irrigation (component iv):

The scheme aims to provide solar power support to 30% extent of CCA covered under micro-irrigation (i.e 30% 24 Lakh ha = 7.2 Lakh ha).

(4) Reuse of waste-water (component v):

Pilot projects of 10 numbers are proposed to be supported with infrastructure for re-use of municipal and industrial waste-water depending upon viable project proposals received from State PIAs.

(5) Conjunctive use of ground-water (component vi):

Out of total OFD works, 30% of CCA is proposed to be covered under conjunctive use of ground water along with surface water (i.e. 30% of 56 Lakh ha=16.8 Lakh ha.)

(6) Canal automation (component vii):

Pilot projects of 10 numbers are proposed to be supported for canal automation to improve demand side management with focus on the elements of control and measurements depending upon viable project proposals received from State PIAs.

(7) Strengthening of PIM (component viii):

The actual CCA under control of WUA may vary extensively from project to project, and form one outlet to another within a project. For the purpose of estimation, formation of one WUA for every 500 ha of CCA has been assumed, and for the targeted CCA of 80 Lakh ha, total number of WUAs is estimated as 16000.

(8) Modernization/ Extension/ Creation of WALMIs (component ix(a)):

Modernization & Extension of WALMIs will be taken for all the existing WALMIs/ IMTIs in 14 States as presented below:

1	North Eastern Regional Institute of Water and land Management, Tezpur	Assam
2	Water and Land Management Institute, Patna	Bihar
3	Water and Land Management Institute, Anand	Gujarat
4	Haryana Irrigation Research & Management Institute, Kurukshetra	Haryana
5	Water and Land Management Institute, Dharwad	Karnataka
6	Centre for Water Resources Development and Management, Calicut	Kerala
7	Water and Land Management Institute, Bhopal	Madhya Pradesh
8	Water and Land Management Institute, Aurangabad	Maharashtra
9	Water and Land Management Institute, Cuttack	Odisha
10	Punjab Irrigation Management and Training Institute, Amritsar	Punjab
11	Irrigation Management and Training Institute, Kota	Rajasthan
12	Irrigation Management and Training Institute, Trichy	Tamil Nadu
13	Water and Land Management Training and Research Institute, Hyderabad	Telangana
14	Water and Land Management Institute, Lucknow	UP

In addition to above, 7 new WALMIs are proposed to be created in States where WALMIs are not in existence at present (component ix(b)).

(9) Incremental establishment (component x) & Capacity building of PIAs/WUAs (component xi):

Taken as lump sum, with justification of amount given at Annexure-III.

ANNEXURE-III

Unit Rates of Structural & Non-structural interventions

(1) OFD works (Component i) & Micro-irrigation works (component iii):

As per guidelines of the ongoing CADWM works, following rates have been taken for the cost estimation purpose:

Sl. No.	Component	Rate
1	OFD works	Rs. 35,000 per hectare
2	Micro-irrigation works	Rs. 50,000 per hectare

(2) System Deficiency Correction (component ii):

Summary of rate analysis for System deficiency correction of three projects, as per proposals submitted by the States recently, is as under:

Sl. No.	State	Project	Irrigation Potential (Thousand hectare)	Cost of System deficiency correction (Rs. Lakh)	Per ha cost of System Deficiency correction (Rs.)
1	Rajasthan	Sawan Bhadon Medium Irrigation	5.85	1088.69	18610.09
2	Assam	Sukla Irrigation Project	17.00	11164.63	65674.29
3	Maharashtra	Girna Major Project	79.293	1335.26	1683.96
Total			102.143	13588.58	13303.49

As may be seen, the per hectare cost of system deficiency correction is expected to vary widely from project to project. An average cost of Rs.13,000 per hectare has been taken for the cost estimation purpose.

(3) Installation of solar power system for micro-irrigation (component iv):

Summary of rate analysis for solar power system, for micro-irrigation in 169 hectare CCA of Outlet RD-44600/R- Paharpur Minor (District Kaithal), as per proposals submitted by Haryana recently, is as under:

Sl. No.	Description	Qty	Unit	Rate (Rs. Lakh)	Amount (Rs. Lakh)
1	Erection of independent energized 11 KV electric line from substation to site including provision of equipment for net metering	2	km	4.50	9.0
2	Supply, installation and commissioning of Grid connected solar water pumping system with maximum power point tracker including PV array of capacity 22 KWp, submersible pump 20 hp (three phase AC) having 16 lps discharge capacity and head range of 50 to 55 m; three phase inverter, electronic protections, interconnect cables, on-off switches and other accessories as may be required.	3	Set	27.50	82.50
				Total Cost	91.5
				Cost per hectare of micro irrigated area	0.542 Lakh

An average cost of Rs. 50,000 per hectare has been taken for the cost estimation purpose.

(4) Reuse of waste-water (component v):

In Ludhiana (Punjab), 5 STPs of capacity of 466 MLD have already been commissioned and are in operation. Similarly, for treatment of effluent from textile dying industries of Ludhiana, four Common Effluent treatment plants CETP of capacity 25 MLD, 40 MLD and 15 MLD are under construction. The Pollution Control Board has decided to maintain the standard for constitution of specific parameters within prescribed limits for utilization of treated sewage water. These parameters shall be maintained after mixing of treated waste water from CTEPs of wastewater of STPs Ludhiana and mixed effluent shall be utilized for irrigation purposes through Lower Budha Nallah. Towards this intent, the Department of Irrigation has prepared a project proposal for utilization of treated domestic sewage of Ludhiana city, after treatment through Budha Nallah and constructing network of distributaries/water courses. Summary of rate analysis for the infrastructure for conveyance and additional treatment of municipal and industrial waste water for augmenting water for the farm use, as per proposals submitted by the States recently, is as under:

Sl. No.	Project	CCA (hectare)	Cost of Project (Rs. Crore)	Per ha cost of Project (Rs. crore)
1	Lower Budha Nallah	13,538	138	0.0101

The size and scope of other projects may vary substantially, and hence an average cost of Rs. 200 crore per project has been taken assuming irrigation benefit in about 20,000 hectare per project.

(5) Conjunctive use of ground-water (component vi):

The cost estimate of the activity of conjunctive use of groundwater, of an average provision Rs.9000 per hectare has been made on the basis of information gathered from non-governmental organizations/ entities closely associated with the participatory groundwater management activities such as Arghyam, ACWADAM (Maharashtra), ACT (Gujarat), WASSAN (AP & Telangana), PSI (Uttrakhand), and INREM (Gujarat).

(6) Canal automation (component vii):

The cost estimate of the activity for canal automation to improve demand side management with focus on the elements of control and measurements is as under:

Sl. No.	Project	Total CCA (ha)	Cost of Canal Automation (Rs.crore)	Cost of Canal Automation upto distributary (Rs.crore)	Per hectare cost of Canal Automation (Rs.)
1	Narayanpur Left Bank Canal (NLBC) Project System (Karnataka)	29,000	139.46	58.0	20,000
	Total	29,000	139.46	58.0	20,000

Assuming CCA of about 25 thousand ha to be covered per canal automation project, the cost of implementation per projects would be about Rs.50 Crore, and estimated cost for 10 projects would be Rs.500 Crore.

(7) Strengthening of PIM (component viii):

As per guidelines of the ongoing CADWM works, and assuming an average 500 ha of CCA per WUA, following rates have been taken for the cost estimation purpose:

Sl. No.	Component	Rate	Amount per WUA (for 500 ha)
1	One-time functional grant to WUAs	Rs. 1,200 per hectare	Rs. 6 Lakh
2	One-time infrastructure grant to WUAs	LS	Rs. 5 Lakh
3	Agriculture Livelihood Support Services	LS	Rs.5 Lakh
		Total	Rs.16 Lakh

(8) Modernization/ Extension/ Creation of WALMIs (component ix(a) and ix(b)):

As per reviews taken for WALMI (Aurangabad), the cost break-up for modernization and extension of existing WALMIs/ IMTIs is taken as under:

Sl. No.	Component	Qty	Rate	Amount
1	Modernization of main centre	1	Rs 5 Crore	Rs. 5 Crore
2	Creation of Extension Centres	3	Rs 15 Crore	Rs. 45 Crore
			Total	Rs. 50 Crore

Another proposal for establishment of a new Water Land Management Training and Research Institute received recently from Andhra Pradesh has been referenced, and cost break-up for creation of new WALMIs is taken as under:

Sl. No.	Component	Qty	Rate	Amount
1	Creation of main centre	1	Rs 55 Crore	Rs. 55 Crore
2	Creation of Extension Centres	3	Rs 15 Crore	Rs. 45 Crore
			Total	Rs. 100 Crore

(9) Incremental establishment (component x(a))

Incremental establishment cost at Central level mainly includes: cost of Engineering & Management Consultancy for CPMU taken as Lump-sum cost for estimation purpose at this stage, as under.

Sl. No.	**Component**	**Rate**	**Amount (Crore)**
1	Services of Engineering & Management Consultancy	LS	110
2	Services of Social Institute/ Consultants	LS	40
3	Third party Evaluations	LS	40
4	Miscellaneous including IEC activities	LS	10
	Total		200

(10) Incremental establishment (component x(b))

Incremental establishment cost at State level mainly includes: (i) cost of hiring the services of Social Facilitators, and (ii) Cost for Services of Consultants & other incremental establishment cost is, as summarized below:

Sl. No.	Component	Qty	Rate	Amount
1	Services of Social Facilitators	80 Lakh Ha	Rs.750/ha	Rs.600 crore
2	Services of Consultants & other incremental establishment cost	1% cost of Structural Interventions (Rs.52302 crore)		Rs.525 crore
			Total	Rs. 1125 crore

(11)Capacity building of PIAs/WUAs (component xi):

The cost of capacity building at Central level is taken as Rs. 2 crore per year for the Scheme period of 4 years. The Capacity building cost at State level includes: (i) cost of capacity building of State officials taken at the rate of Rs. 1.0 crore per year per State, and (ii) cost of capacity building of WUAs taken at the rate of 5000 per persons for 3 persons of each WUA (i.e. Rs.15000 per WUAs). The break-up of the Capacity building cost is summarized as under:

Sl. No.	Component	Qty	Rate	Amount
1	Capacity building at Central level	4 years	Rs 2 crore per year	Rs. 8 crore[30]
2	Capacity building of States:			
	Officials of 24 States	4 years	Rs 1 crore per year per State	Rs. 96 crore[23]
	16000 Numbers of WUAs	3 persons per WUA	Rs. 5000 per person	Rs. 24 crore
			Sub-Total (States)	Rs. 128 crore

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[30] *60% of the amount allocated for capacity building of Central and State officials will be in Foreign Exchange for meeting the cost of international trainings/ workshops/ seminars/ symposiums/ exposure visits.*

Appendix-D

Sl. No.	Comments of IFD	Replies of CADWM dated 23/06/2017
1.	Flexibility provision under para 5.3 states that "besides bearing full burden on Central component, a substantial part of the State component will also be funded by the Central Government". It may be clarified o which ground Centre State cost sharing ratio @ 90:10 on General States has been proposed where 60:40 is applicable under other scheme.	The EFC has proposed sharing of project cost at 90:10 (Centre: State) ratio for the North East and Himalayan States and at 60:40 (Centre:State) for other general States for all components of the Scheme except the component of "Modernization/extension/creation of WALMIs". For the component of capacity building of WALMIs, the proposed funding pattern is 90:10 (Centre:State) for all the States in view of the following: (i) Only the one time capital cost of modernization/extension/creation of WALMI is being funded under the Scheme while the entire burden of enhanced recurring cost will have to be borne by the States. (ii) The State will have to provide the additional land through their own resources and the cost of the capital component will not be included under the Scheme. (iii) Sub-Committee-C constituted by the Ministry of Drinking Water & Sanitation for "Revitalization of WALMI, Aurangabad as pilot for Reorienting Water Sector Employees'. has recommended the funding pattern of 90:10 (Centre:State) for modernization/extension/creation of WALMIs in all States.
2.	Cut off date for balance CCA has not been indicated for the projects identified in Annexure-I. The actual cost of inclusion would be decided at the time of inclusion of the project under the scheme and	The balance CCA has been finalized in the State Level Consultation held during 5th to 17th April, 2017. The outstanding/balance CCA as on 31st March, 2017, has been assessed as 80 lakh ha and incorporated as

	restricted to estimates or balance cost at the beginning of financial year in which project is included.	Scheme target. This has been brought out at para 1.9 of EFC Memorandum.
3.	Project-wise balance cost may be indicated as applicable minimum funding in r/o identified projects.	The gross CCA target has been firmed-up, however, the targets of various work components envisaged may vary from project to project based on ground realities and will be assessed at the time of finalization of DPR.The project-wise balance CCA has already been indicated at Annexure-I of Appendix of EFC.
4.	The scheme in addition to completion of CADWM works, also seeks to address system deficiencies in canal network, which was not part of CADWM scheme. These aspects were to be covered under AIBP scheme as ERM and inclusion of new projects was stopped with approval of PMKSY. Need for inclusion of such works when only 99 prioritized projects have been included under PMKSY needs consideration (there may be several AIBP projects, which have been included but not being provided assistance post focus on 99 projects).	For CADWM projects included under this scheme to fully serve their purpose, it is necessary that "Correction of System Deficiency" be included in all these projects. In order to ensure that the outlet for which water courses have been constructed are fully utilized, the outlet should get its design discharge which is possible only if system deficiency is addressed. However, cost of correction of system deficiency has been restricted to one-third of the cost of other components to prevent it from becoming a purely ERM scheme. Further enhancement in cost of correction system deficiency, if any, will be borne by the State Government. This provision will be applied on all ISBIG projects, and it may be noted that projects included in 99 prioritized project of AIBP are not covered under ISBIG.
5.	The proposed duration of the scheme is 48 months (Four Years with likely commencement of scheme from 3rd Quarter of Financial Year 2017-18 (FY1), and spread over Five Financial Years and conclusion in 2nd Quarter of	The project is proposed to be completed in 48 months spread over 5 Financial Years with physical progress targets varying from 5% (in FY1) to maximum of 35% (in FY3). The financial outlays are assumed to tally with the physical progress targets.

	2021-22 (FY5). In relation to PMKSY, debt servicing arrangements through NWDA (which is also the borrower on behalf of GOI) have been made under the Scheme. In case, such liabilities are expected in current FY, supplementary is involved and quantified liabilities may be identified well in time.	Thus an outlay of Rs.2885.75 cr. is targeted for FY1 which may entail a debt servicing cost of about Rs.91.87 crore as shown below:- Total Cost : 2885.75 cr. Central Share : 1813.37 cr. State Share : 1072.38 cr. 6 months interest of central share @ 8.6% : 77.93 cr. (A) 6 months interest of State share @2.6% : 13.94 cr. (B) A+B : 91.87 cr.
6.	While para 1.8 states that the proposal has genesis in the Cabinet proposal 2016 for the revised PMKSY scheme, and meant for outstanding CADWM works of all other projects, the scope seems to have been extended to new projects also. SMD may please provide break-up for schemes already included in CADWM upto 2017 and not covered under PMKSY, and fresh proposals in separate Annexure(s) with breakup/cost involved.	The earlier CADWM Programme has been an open ended programme where new projects were being continuously added up as per proposals received from State Governments from time to time. At the time of approval of 99 projects, 158 CADWM projects were included under CADWM Programme, of which only 37 projects were moved to 99 prioritized projects. The Cabinet note, not only refers to the left out 121 projects, but also to other outstanding projects which would have been included in the open-ended CADWM Programme. The present EFC memorandum has taken the cut-off

		date of 31st March, 2017 for inclusion of all existing projects with outstanding CADWM works and the list of such projects was finalised in the State level consultation held from 5th to 17th April, 2017. In the list of 317 projects finalized during State level consultation, 84 projects were under the included list of CADWM during 12th Plan. About 37projects out of 121 projects (which were excluded at the time of taking up of 99 projects) have been indicated by States as either completed or nearly completed and they have not been proposed by States for inclusion under ISBIG. The list of 317 projects, indicating those which were also including under CADWM during 12th Plan, is given at Annexure-I of Appendix of the EFC.
7.	It is noted from para 2.1 that DPRs are required to arrive at final coverage under micro-irrigation, numbers of WUAs etc. It would thus appear that the break-up of structural and non-structural interventions as also the cost is tentative at this stage. Investment Clearance for CADWM works has been done away with. The mechanism for cost-assessment of projects vis-à-vis DPRs may be provided in EFC.	The balance CCA of 80 lakh ha has been firmed-up project-wise (317 projects) as brought out at Annexure-I. 30% of the balance CCA will be targeted under micro irrigation at gross level, and this target is also firmed-up. However, variation in micro-irrigation targets may happen at project level, and in some of the projects micro-irrigation extent may get reduced owing to ground realities which will be compensated by seeking higher micro-irrigation targets in the other projects of the same State. Thus, some of the most suitable projects may achieve 100% micro-irrigation thereby providing better implementation and operational performance. As such, the cost estimate of the scheme is not subjected to any variation on

		mentioned account. Similarly, the indicated number of WUAs are by and large firmed-up at gross level as per prevailing norms, though the numbers from project to project may have compensating variation based on ground realities. Accordingly, the project-wise break-up of cost will be firmed-up at DPR stage only. In the CADWM programme under 12th Plan as well as earlier plans, the projects were included on submission of DPRs by the States and as such no other process of investment clearance was involved. Similar procedure will be adopted for ISBIG, and the DPRs will also require mandatory approval of CWC. (This has been brought out in Section 8.0 of Appendix of EFC which describes the Project Implementation Arrangement).
8.	As per para 1.11 there is no overlap. But as per para 2.4 the scheme has overlapping components with other schemes of GOI and State Project Implementing Agencies will be required to ensure that under no circumstances shall there by any duplication or double counting of works. Feasibility of consideration of such components and clearance thereto through an inter-ministerial team may be considered.	The Para 1.11 states that there is no overlap with any other Scheme/Sub-Scheme in terms of targeted project or the targeted work components of a project. Whereas, Para 2.4 states that there are some other Schemes which also provide same or similar outcomes, and hence, the methodology for avoidance of overlap as well as hence convergence of efforts has been narrated. The suggestion for constitution of inter-ministerial team for inclusion of project has been noted for compliance at appropriate stage.
9.	As per para 4.1 table 5, a cost of Rs.1453 crore for establishment/ capacity building is involved, including cost of Rs.1125 for est. in States. The components	As per table 5, a provision of cost Establishment in Centre is Rs.200 crore, for State Rs.1125 crore and for capacity building is Rs.128 crore. The incremental establishment cost at

	involved may be elaborated and it may be confirmed that no salary of State staff is involved in the proposal.	central level mainly includes : Cost of Engineering & Management Consultancy for CPMU whereas the incremental establishment cost at State level includes cost of hiring the services of Social Facilitators, cost of services of Consultants etc. The cost break-up for State is Rs.600 crore toward service of Social Facilitator and Rs.525 crore for services of Consultants. Besides for capacity building Rs.8 crore for Centre, Rs.96 crore for State and Rs.24 crores for 16000 WUAs has been kept. No provision for payment of salary of the Staff of State Government has been kept .
10.	Para 4.2 states that Cost escalation at an average annual inflation rate of 5% has been applied on the 'Structural Interventions' part of the base cost after 18 months (one-and-half years) of project commencement; and the project cost for full duration of the Scheme is estimated as Rs.61,237 Crore, against base level cost of Rs.57,715 crore. The cost parameters or ceilings are to be pre-defined and thus GOI share firmed-up on inclusion. Accordingly, escalation in structural cost is to be borne by the State concerned. The components/reasons for inflation factoring may be elaborated.	It may be noted that in case of ongoing 99 prioritized AIBP projects, the escalation cost upto an extent of 20% has been agreed for cost sharing purpose. The cost escalation during project implementation phase is an unavoidable component and needs to be considered for full funding closure-of the project proposed in mission mode. Only the realistic scenario of cost escalation beyond a period of 18 months applied on yearly basis on the declining balance cost of structural interventions has been incorporated and the net impact of the cost escalation for full duration of the Scheme over and above the base level cost estimate of the structural intervention is only 6.73 % as brought out at Para 6.2 of the Appendix of the EFC.
11.	Para 4.5 needs clarity. Land acquisition involved if any for the ancillary/additional activities may	In CADWM projects, land is made available by farmers free of cost for carrying the watercourse through their own fields. Only in cases of Micro-

	also be borne by the States.	Irrigation/works of waste water reuse/creation of new WALMIs extra land may have to be acquired. Even in such cases and in any ancillary/additional activities, the cost of land acquisition, if any, shall be borne entirely by the State Government. This has been made amply clear in Para 4.5 and also in Para 6.0 of the EFC.
12.	Use of recycled water in the channels involves opinion building among farmers etc. A larger elaboration on costs/methodology proposed may be provided.	The subject has been dealt with elaboration in Para 3.8 and Para 5.3.3 of Appendix of EFC with further details on extent and rate covered in Annexure-II and Annexure-III of the Appendix of the EFC.
13.	As per para 5.1, as was done in the case of 'Scheme of 99 prioritized AIBP projects', Ministry of Finance may allow NABARD for cost free funds of appropriate amount each year during 2017-18 to 2021-22 so that rate of interest to States is maintained at about 6% during the entire period of Scheme upto 2021-22. The dispensation was given for prioritised 99 projects under PMKSY as these were considered ripe and low hanging fruits. Extension and workability of such arrangements under the new scheme may be considered by MOF/EFC.	The bridging of gap in the existing Irrigation Potential Created (IPC) and the Irrigation Potential Utilized (IPU) is considered as the low hanging fruit, targeted comprehensively under the proposed ISBIG Scheme.
14.	As per para 5.3, enhanced funding @ core schemes is proposed, including exception for WALMIs where higher funding is proposed. Under PMKSY ongoing CADWM works for the identified prioritised projects are being funded with	The justification for funding pattern for WALMIs has been formulated at Item 7.0 of Appendix to EFC Note. There is no additional funding entailed by the Centre as performance linked incentivization. The gain of high performing project will be adjusted

	Central share @ 50%, in line with directions of MOF in relation to core schemes (60:40 or extant funding pattern whichever is lower). The scheme seeks to not only enhance the funding pattern, but also have additional funding provision based on performance. This aspect may require specific consideration by DOE and EFC vis-à-vis Centre:State sharing formula approved and circulated by DOE. Further, Performance linked incentivisation is proposed to all projects for any two performance criteria out of three criteria : (i) Before-time completion; (ii) Increased water use efficiency; and (iii) Success of PIM. However, no success parameter for the criteria has been quantified. It may be added here that erstwhile scheme of AIBP had component of higher funding [2013 guidelines], which provided that quantum of Central Assistance could be enhanced <u>from 25% to upto 50%</u> as an incentive for new projects subject to the condition that the States actually carry out water sector reforms as per the reform benchmarks to be laid down by the Ministry of Water Resources in due course. Till finalization of reform benchmarks by MoWR, following measures were to be considered as water reforms (1) Measurement on volumetric basis, (2) Participatory Irrigation	against the cost of a low performing project. The proposed incentivization will be implemented in a transparent manner through guidelines and the details such as indicators of successful PIM will be covered in the guidelines. EFC Memorandum has been prepared with comprehensive information as per the standard format.

	Management, (3) Active working of Water User Association, (4) Micro Irrigation, (5) Collection at water cess by Water User Association, and (6) Maintenance by Water User Association. With implementation of any three of the above, the State Government will become eligible for enhanced funding. Success stories if any in this regard may be shared with EFC.	
15.	Para 7.3 provides for sufficient numbers of Social Facilitators [Social Facilitator may be an NGO, or similar entity, having substantial experience in influencing village level social activities and reforms; they will render service as per TOR, and payment made to them will be linked to the specified deliverables] for guiding WUAs towards successful and sustainable PIM; and the cost entailed on this account will be booked under State's Project Management component. The axiom 'sufficient numbers' may be elaborated along with proposed criteria.	The total CCA targeted under this Scheme is about 80 lakh ha. For catering to 80 lakh ha about 16000 WUAs are to be constituted as per the prevailing norm of the 500 ha per WUA. The cost of social facilitator is taken as Rs.750 per ha and the cost of the social facilitator per project will vary as per the CCA extent of the projects. It is proposed to employ one Social Facilitator (SF) entity per project; however, in case of large projects more than one SF entity may be hired.
16.	Financial implications in executive summary i.e. the break-up of the Scheme costs in Section 6.0 of the Appendix, details of 'Quantity' and 'Unit Rates' used in preparation of the cost estimates etc. in Annexure-II and Annexure-III of the Appendix respectively etc. may appropriately be brought	The Annexure-II and Annexure-III of the Appendix give details of the cost items widely referred in the EFC and the Appendix of the EFC. All references have been explicitly presented in the proposal submitted as per standard format.

	in main body with basis for estimates. Variation if any, vis-à-vis extant norms for ongoing CADWM projects under PMKSY may also be brought out.	
17.	While the role of Social Facilitator may be important in promoting PIM, it is felt that the responsibility and initiative should rest with States for involving suitable SFs, rather than Government of India.	The Social Facilitator will be hired and operated by the concerned State Government. The monitoring of the activities and performance of SF will also be carried out by a Social Science Institute/Consultant engaged by the Central Project Management Unit
18.	Further, the Scheme also covers pilot projects of reuse of waste water as well as canal automation and will result in creation of assets that will require regular maintenance as well as safety/security arrangements from vandalism (solar panels, IT and water treatment related equipments/ infrastructure) .	The stated scheme components have been proposed as part of 'Comprehensive System-wide' strategy essential to obtain the sustainable outcomes. Issues such as safety/security/vandalism etc are expected to get addressed through Participatory Irrigation Management approach which is fundamental to the Scheme.
19.	The success of SCADA in India may be brought on file. Also the legacy arrangements for maintenance of the above assets.	The proposed canal automation component is not for leveraging the SCADA part of the system which focusses on manpower reduction goal. Rather the canal automation system is suggested to introduce the elements of "Control" and "measurement" so as to promote demand-side management in irrigation. The actual scale of the operation per system will be miniscule and will not encounter issues faced in large coverage involved in typical SCADA system. As far as success of SCADA in India is concerned, it is informed that the system installed in NLBC (Karnataka) has successfully commenced its operation.

Sl. No.	**Comments**	**Replies of CADWM dated 05/07/2017**
	US(IFD)	
1.	It appears that the observations of IFD from Page 6/N to 9/N have appropriately been clarified on SMD's note from Np-10 to Np-16. Draft EFC memo may be circulated with the approval of Hon'ble Minister, WR,RD&GR.	No action required.
	US (Budget)	
a.	Item 3 Np.10 – Project-wise balance cost – SMD has stated that project-wise cost would be available once DPRs are available. It is suggested that in the interim, State-wise cost based on cost parameters as adopted for comments at Table D below para 6.2 of EFC memo be annexed. The cost parameters adopted may be annexed to EFC Memo.	Unable to provide State-wise cost as different components of the Scheme such as reuse of waste water, canal automation etc. are to be taken on pilot basis (not exceeding 10 numbers) depending upon the proposals received from the State Government.
b.	Item 5 Np.11 – Debt servicing cost of Rs.91.87 crore has been proposed in FY 2017-18 towards expected off take of loan of Rs.2885.75 crore covering Central and State loans and <u>interest subvention through EBR</u> for State loans keeping State lending rates @6%. SMD vide Item 13. NP.14 has justified such subvention. DEA has recently suggested in the context of PMKSY that States loans may be lent @6.50 %.	The proposal @ 6% lending rate for States has been made as per the Cabinet Note approval given for 99 prioritized projects wherein ISBIG Scheme has also been proposed. However, as suggested debt services cost has also been worked out @ 6.5% lending rate for States and is as given below:- Total Cost : 2885.75 cr. Central Share 1813.37 cr.

		: State Share 1072.38 cr. : 6 months interest of central share @ 8.6% 77.93 cr. (A) : 6 months interest of State share @2.1% : 11.26 cr. (B) A+B 89.19 cr. :
c.	Item 6 Np.11-12 – As already suggested by IFD, break up of projects at Annexure I of already included projects and new projects proposed is required to be annexed to EFC Memo to ascertain committed liabilities under CADWM and carried forward under ISBIG, and new liabilities being created under ISBIG.	Out of 317 projects, 83 were included in CADWM Programme of MoWR,RD&GR before commencement of 99 priority project scheme, and 234 are newly added projects. Based on the pro rata CCA coverage of already included and new projects, committed liabilities in CADWM Programme and carried forward under ISBIG, are 31510.02 cr. and 29726.98 cr. respectively assuming that all project components of the present proposal are included in both.
d.	Item 8 Np.12-13 – The position may be appropriately reflected under para 1.11.	Item No.1.11 of EFC has suitably been modified and suggestion incorporated.
e.	Item 10 Np.13 – As regards proposed escalation factoring, comparison with PMKSY can perhaps be drawn with projects already included under CADWM earlier and now proposed to be funded under ISBIG. However,	Decision needs to be taken by EFC.

	provision for escalation for new inclusions and funding from market interest being borrowings needs specific consideration by EFC.	
f.	Item 14 Np.14 – The suggestion has perhaps not been fully appreciated. In order to justify proposed incentivization idea, scope, criteria and methodology; success stories available if any may be shared with EFC, particularly if any under AIBP projects where such incentivization was introduced in 2013-14.	It may be noted that incentivization is being proposed for the first time and, hence, no past example can be cited as a success story.
g.	Item 16 Np.15 – The cost parameters are critical to assessment of cost of scheme and thus cannot be relegated as enclosure of enclosure to EFC. It is once again suggested that the cost parameters may be annexed to main EFC memo under para 4.2 – basis of these cost estimates along with the reference dates for normative costing as per standard format as an Annexure with reference point.	Suggestion incorporated.