Workshop on
'Methodology adopted for fixation of water rates and Physical & Financial Aspects of Major and Medium Irrigation Projects in India'

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Objectives of the Workshop

- To discuss the methodology/principles adopted for fixation of water rates by stakeholders.
- To sensitise the stakeholders on the relationship between water pricing and efficient use of water.
- To understand the problems and way forward towards improving recoveries of working expenses through Gross Receipt from irrigation cess.
- At present the data received from CAG is being compiled in the publication and brought out by ISO, CWC.
- There remains a gap between the year of publication and data availability from CAG and State/UTs.

Objectives of the Workshop (Contd…)

- Accordingly, it has been envisaged to bring out this publication on an annual basis incorporating unaudited data from the stakeholders subject to modification after getting the audited data from CAG. It is proposed to get the views of the stakeholders on the same during the workshop.
- To have deliberations on the proposed formats for the collection of the additional data/information and get the views/suggestions of the stakeholders.

Expected Results of the Workshop

- At the end of the workshop, we would have:
- A better understanding of the methodology adopted for fixation of water rates by States/UTs.
- Finalisation of the proposed formats, as mentioned above, for collecting the additional data/information from States/UTs on water pricing, physical and financial aspects of major and medium irrigation projects (separately) in India.
- The latest data from States/UTs on provisional basis, subject to the final audit, for incorporation in the publication with the audited data of CAG.

Factors that contribute to the process of levying Water Rates

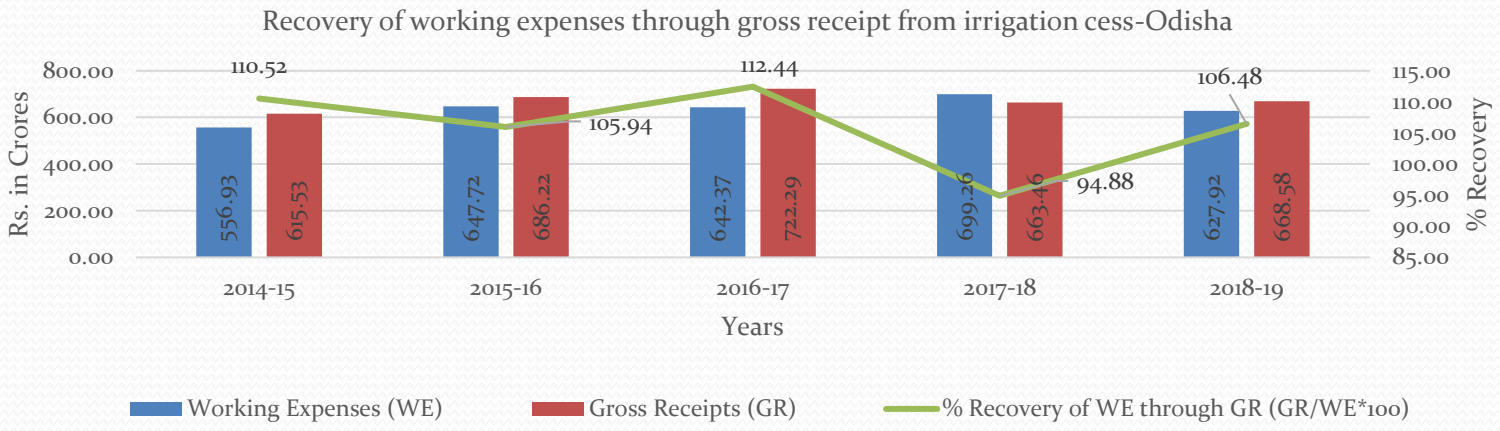
- Depends on **kind of crop**.
- **Area** required to be **irrigated**.
- States to ensure that they provide **revenue sufficient** to recover the **cost of creation of irrigation potential.**
- Hike in **labour cost**.
- Establishment and other **recurring costs of operation and maintenance.**
- Crop Water r**equirement/Availability** of water.
- **Support Price** of Agriculture Products.
- **Net Benefits** to the farmers from the produced.
- **Water rates** being followed by the **neighbouring states**.
- The **paying capacity** of the farmers.

State-wise Statistical Analysis on the Trend of Working Expenses, Gross Receipts, and % Recovery of Working Expenses through Gross Receipts - Financial Aspects of Major and Medium Irrigation Projects

- States/UTs perusal reveals many interesting aspects including recoveries of working expenses through gross receipts showing significant variations amongst different States.
- The trend of Recovery of working expenses through Gross Receipts from Major & Medium irrigation cess during the years 2014-15 to 2018-19.

- Source: Combined Finance & Revenue Accounts) (Volume-1) The Comptroller and Auditor General of India (CAG)

ODISHA



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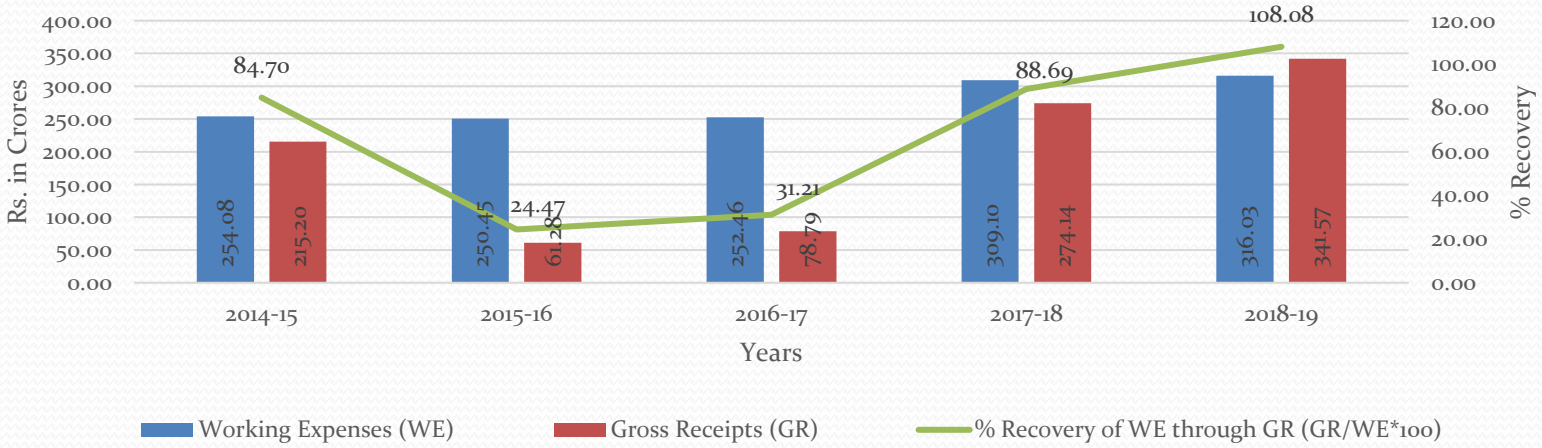

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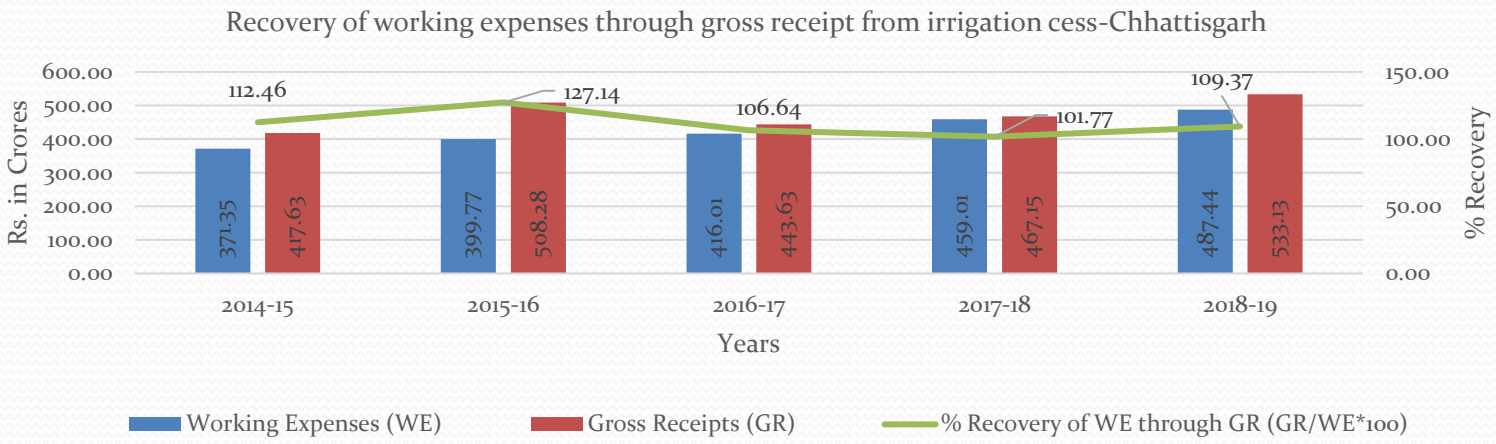

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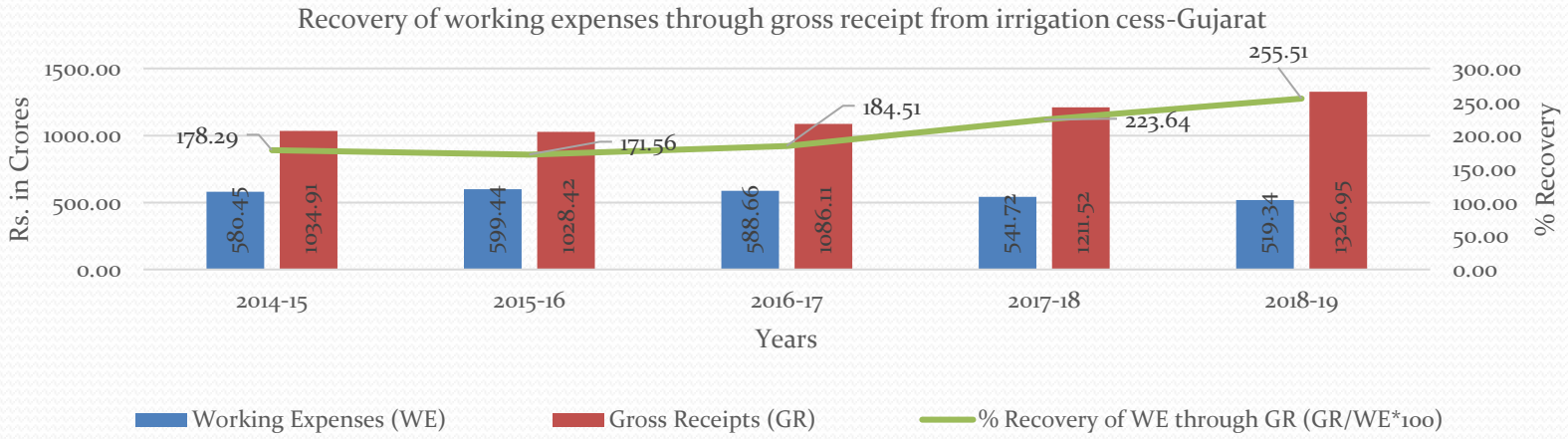

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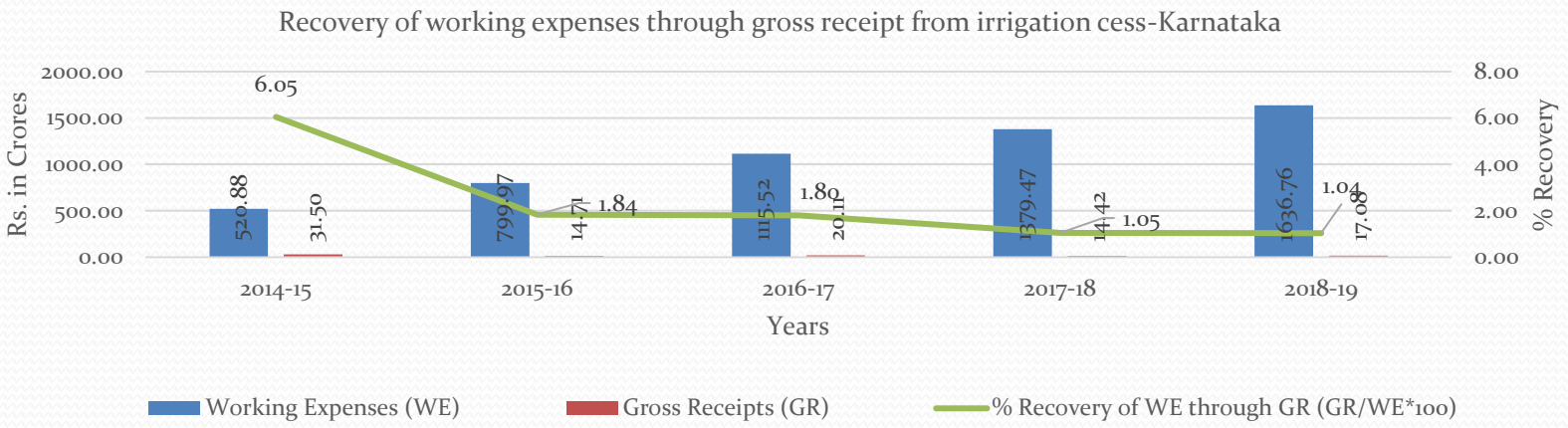

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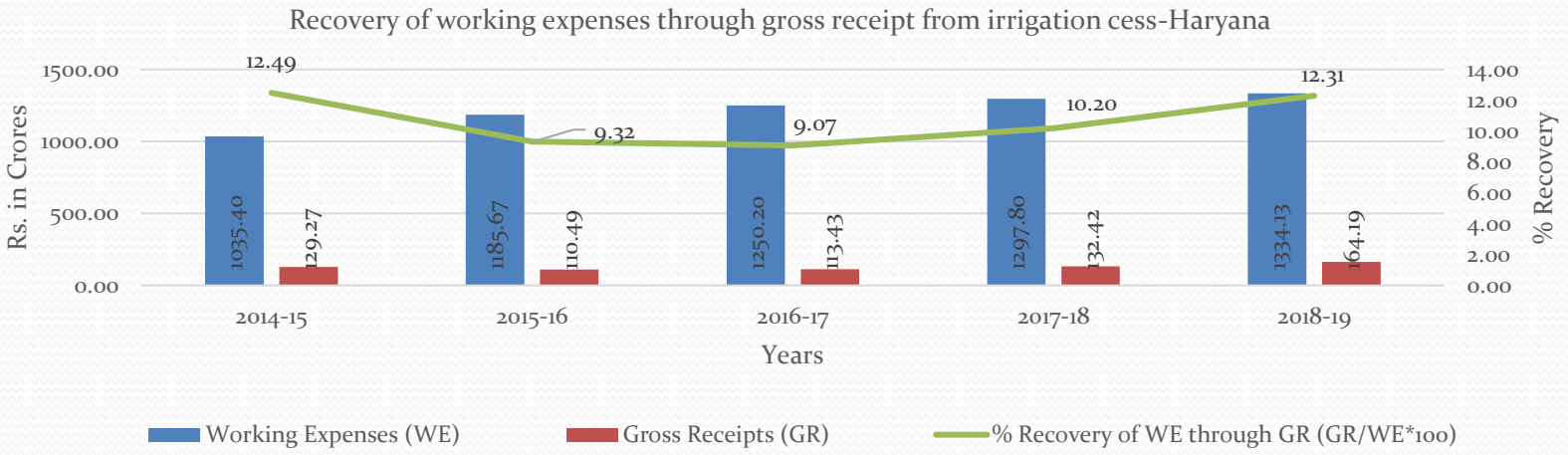

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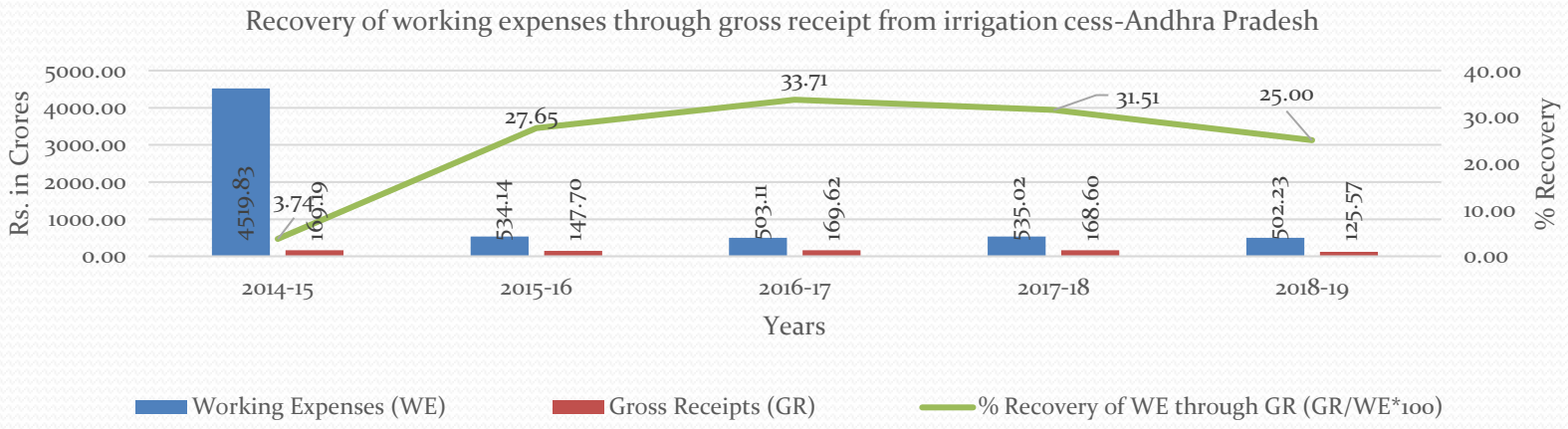

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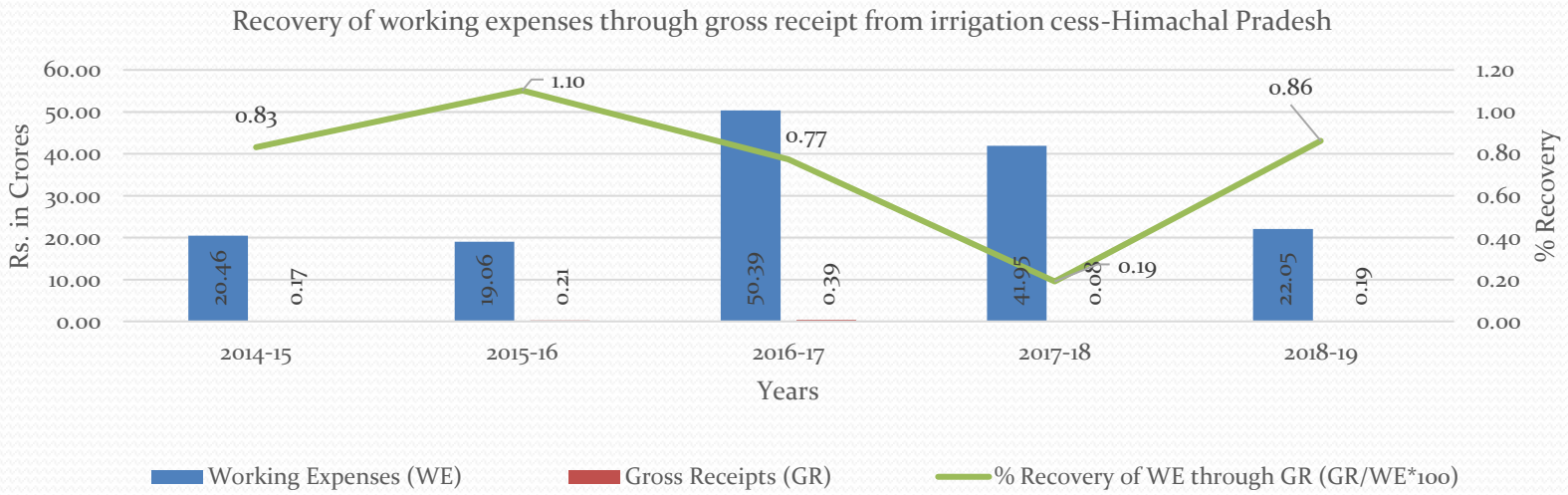

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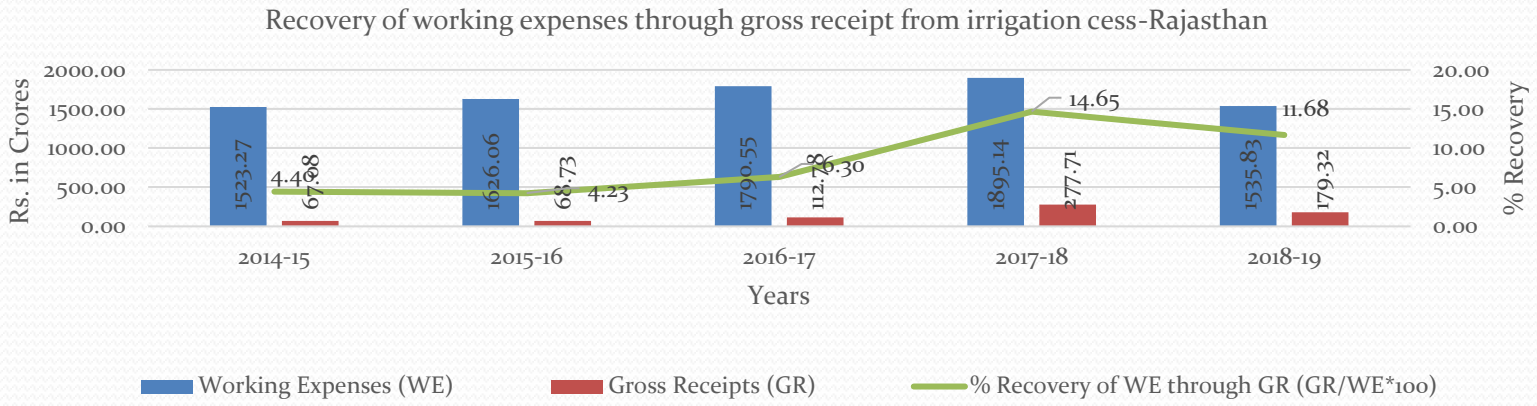

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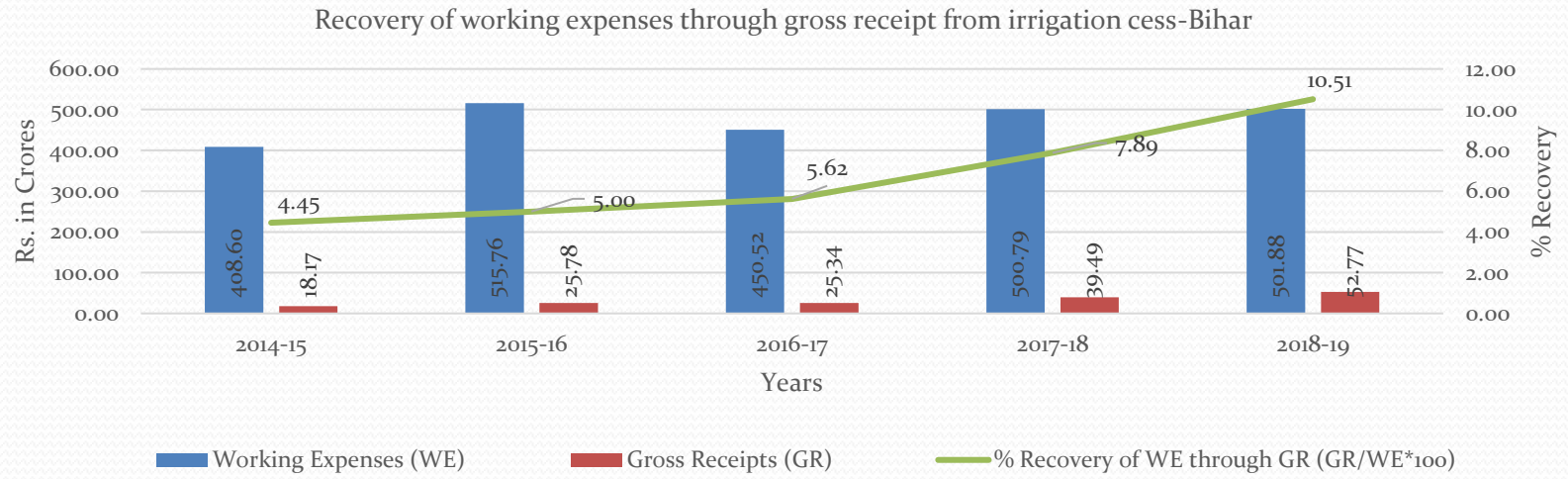

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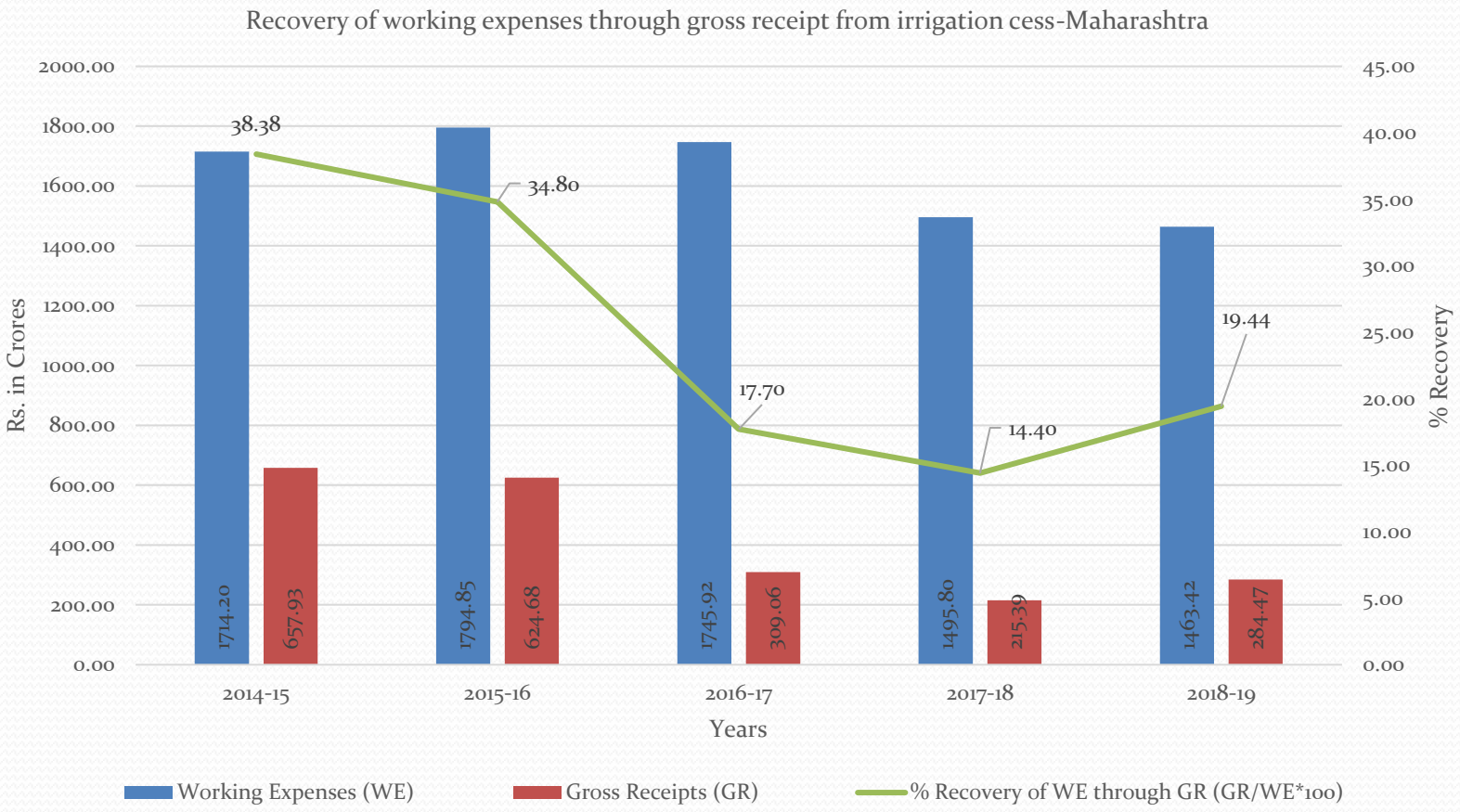


Proposed Formats for Additional Data/Information Collection

Table 1: Financial Aspects of Major Irrigation Projects during 2001-02 to 2022-23
(Rs. in Lakh)

Sl. No.	Year	Capital Expenditure			Working Expenses		
		Dams/Barrage /Headworks	Canal Systems	Others	Dams/Barrage /Headworks	Canal Systems	Others

Table 2: Financial Aspects of Medium Irrigation Projects during 2001-02 to 2022-23
(Rs. in Lakh)

Sl. No.	Year	Capital Expenditure			Working Expenses		
		Dams/Barrage /Headworks	Canal Systems	Others	Dams/Barrage /Headworks	Canal Systems	Others

Proposed Formats for Additional Data/Information Collection

Table 3: States/UTs-wise Water Projects (Major & Medium) in India

Sl. No.	Year	Name of Projects	Water Projects						Culturable Command Area (CCA) of Canal Systems (In Th. Ha)
			Completed (Nos.)		Ongoing (Nos.)		Storage Capacity of Dams/Barrages (In Million M3)		
			Major	Medium	Major	Medium	Major	Medium	

Table 4: Gross Revenue Receipts of Irrigation, Industrial/Commercial and Domestic use during 2001-02 to 2022-23 (Rs. in Lakhs)

Sl. No.	Year	Irrigation		Industrial/Commercial	Domestic		Others
		Major	Medium		Rural	Urban	

Note:- The data related to bulk water supply may also be included.

Proposed Formats for Additional Data/Information Collection

Table 5: Crop-wise Water Rates in the States/UTs

(Unit: Rs./Ha)

Sl. No.	Season	Name of Crop	Water Rates		Date since applicable	Remarks, if any
			Flow Irrigation	Lift Irrigation		

Note: The data related to collection efficiency in the proposed format may also be explored

Table 6: Water Rates for Industrial/ Domestic Purposes

Sl. No.	State/UTs	Purpose of Water Use	Water Rates	Date since applicable	Remarks, if any

Methodology Adopted by Maharashtra for establishing BWT System

MWRRA, carries out tariff determination exercise in transparent and participatory manner, in consultation with stakeholders.

The Authority has notified “Guidelines for determination of Bulk Water Tariff and issuance of Order, 2019”

- **Step 1 : Approach Paper**
- **Step 2 : Finalizing Criteria**
- **Step 3 : Submission of Draft Tariff Proposal to the Authority by Water Resources Department based on the criteria finalized by the Authority**
- **Step 4 : Stakeholder Consultation on Draft Tariff Proposal**
- **Step 5 : Issuance of BWT Order.**

Criteria for Water Charges

Admitted O & M cost is apportioned amongst 3 water use sectors (Agriculture, Domestic & Industry) on the basis of following criteria :

- **Affordability**
- **Allocation Priority**
- **Accessibility**
- **Impact on Water Quality**

- In order to meet equity, efficiency, and economic principles, water tariff is determined on volumetric basis.
- To ensure efficient use of water in domestic & industrial sectors, Increasing Block Tariff (IBT)

Apportionment of O & M Cost

Sr. No.	Criteria	Weightages (%)		
		Agriculture	**Domestic**	**Industry**
1	Affordability (60%)	15 x 0.6=9.0	15 x 0.6=9.0	70 x 0.6=42.0
2	Quantity and Accessibility (10%)	60 x 0.1=6.0	15 x 0.1=1.5	25 x 0.1=2.5
3	Timeliness (10%)	20 x 0.1=2.0	30 x 0.1=3.0	50 x 0.1=5.0
4	Impact on water quality (20%)	10 x 0.2=2.0	45 x 0.2=9.0	45 x 0.2=9.0
5	**Total (%)**	**19 %**	**22 %**	**59 %**

Area based BWT for individual flow irrigation

Sr. No.	Type of Crop	Rates (Rs. / Ha.)		
		Kharif	Rabbi	Hot Weather
1	Food Grains and other Crops	600	1200	1800
2	Cash Crops			
	a) Sugarcane and Banana	1890	3780	5670
	a) Cotton	810	1620	2430
	a) Horticulture	1422	2844	4266

Incentives and Disincentives in Bulk Water Tariff

1) A) Agriculture : (Incentives)

% of Applicable rate

- For Water User Associations : 25 %
- For Private Lift Schemes with own infrastructure : 35%
- For Project affected persons (PAP) : 25 %
- PAP with own private lift irrigation : 50%
- 1st year of Water Resource Project (Testing) : free supply
- Supply only up to two rotations : 25 % rate per rotation
- Micro irrigation(Drip and Sprinkler) : 25%
- Advance payment before season : 10%

1) B) Agriculture : (Disincentive)

- Change of Water Use (if for industrial) : 2 times industrial rate

Crop-wise Water Rates in Odisha

Water Rates & Cost Recovery Committee has been formed to fix and review water charges.The Committee recommends the water charges to Water Resource Board for approval. For irrigation use the rates have been revised during 1998 & 2002.

Irrigation use Compulsory Basic Water Rate (Kharif crop)

Sl. No.	Class of Irrigation works	Depth of Supply in inches	Rate for flow Irrigation (per hectare/ year) in Rs. Gazette No. 494, dt. 05.04.2002
1	1st Class	28	250
2	2nd Class	23	188
3	3rd Class	18	125
4	4th Class	9	63

Water Rates for Domestic Purpose
(Bulk water supply to RWSS & PHE organizations) for the FY 2023-24

Item No	Purpose for which supply is given	License Fee from Government Water Source (Schedule III) for the FY 2023-24 (in Rupees)	Special water rate from Irrigation Work (Schedule II) for the FY 2023-24 (in Rupees)
1	(i) For bulk supply to Municipalities and Notified Area Councils and other local authorities for drinking & washing etc.	0.34/ m^3 (1000 Ltr.)	0.425/ m^3 (1000 Ltr.)
	(ii)For bulk supply to Municipalities and Notified Area Councils and other local authorities and cluster of villages by industrial, commercial or other establishments actually drawn or allocated whichever is higher for drinking, washing etc.	0.68/m^3 (1000 Ltr.)	0.85/m^3 (1000 Ltr.)
2	For filling tanks mainly for drinking purposes		0.085/m^3 (1000 Ltr.)

Tariff for Rural Water Supply

- The Monthly tariff for domestic connection is Rs. 60/- per month per tap.
- At present in very few villages Water Tariffs is collected by the GP/ Village Water & Sanitation Committee (VWSC) / user group, where 100% Household water supply has been completed, as per the tariff fixed by the Government or tariff fixed by GP/ Village Water & Sanitation Committee (VWSC) through their resolution.
- The Monthly minimum tariff for other users like Small Commercial Shop, Dhabas AWC, ANM Centre, Schools, etc. is three times of domestic tariff i.e., Rs. 180/- per month per Tap which is not implemented at field till now.

"Methodology Adopted by Karnataka for Fixation of Water Rates & Physical & Financial Aspects of Major & Medium Irrigation Projects in India"

Water Rates – Water User Cooperative Societies (WUCS) in Karnataka – Volumetric Basis

Water supplied or made available to Water Users Cooperative Societies (WUCS) for the purpose of irrigation by Nigams, water rate shall be levied on volumetric basis at the rate of rupees twelve per 1000 cum.

Water Rates - Karnataka – For Other Purposes

(a)	For domestic / drinking water supply purpose	Rs. 375 per Mcft
(b)	If water is drawn from natural water-ways, river or streams for Industrial use	Rs. 1,800 per Mcft
(C)	If water is drawn from canal, Tank-Reservoir, Anicut and Bandhara, Pond, Kunta, Madagu Talaparige belonging to Government / Nigam for Industrial use.	Rs. 3,200 per Mcft

STATE OF TELANGANA

Domestic water supply

- As per HMWSSB board proceedings No.136, Dt:10.11.2011, the tariff structure is as follows:
- **1)Domestic category**

Slab (kl/Month)	Water charges in Rs	Sewerage cess charges	
0-15(slums)	7.00	35%	Over water demand
0-15	10.00		
16-30	12.00		
31-50	22.00		
51-100	27.00		
101-200	35.00		
Above 200 (Entire qty.)	40.00		

- 2) Commercial Category

Slab (kl/Month)	Water charges in Rs	Sewerage cess charges	
0.15	20.00	35%	Over water demand
16-100	35.00		
101-200	50.00		
Above 200 (Entire qty.)			

3) Industrial category (GHMC):

Slab (kl/Month)	Water charges in Rs	Sewerage cess charges	
0-15(slums)	25.00	35%	Over water demand
16-100	40.00		
101-200	60.00		
Above 200 (Entire Qty.)	60.00		
Water based units (Entire Qty.)	100.00	-	-
Water based units out side GHMC area (Entire Qty.)	120.00	-	

Calculation of Water Usage charges of UT of Jammu and Kashmir for Irrigation use (Abiana) Rs. Crores)

S.No.	Particulars	Year 2015-16 (In Crores)	Year 2016-17 (In Crores)
1	**Operation and Maintenance Cost** (Incl. Salary, O.E., Legal Charges, Taxes, Electricity Charges, Travelling Expences. POL, Miscellaneous Expenses, Repair & Maintenance).	402.55	464.18
2	Depriciation	61.40	61.16
3	Annual Revenue Requirement (ARR) **(1+2)**	463.95	525.34
4	Revenue at Existing Tariff	6.90	7.97
5	Gap **(3-4)**	457.05	517.37
6	Recovery (%) **(4/3 x 100)**	1.49%	1.52%
7	Revision of Tariff **(5/4 x 100)**	6623.91%	6491.47%

Say 66 times

Note:- An average increase of about 15% over the tariff of the preceding year considering the same percentage increase for future years, the utilities shall be able to recover the ARR (that is aggregate of O&M expenses and depreciation on account of capital cost) over a period of 44 years for Irrigation sector.

Assessment & Recovery Water Usage charges of UT of Jammu and Kashmir (PHE Department) Rs. Crores)

S.No.	Particulars	Year 2015-16 (In Crores)	Year 2016-17 (In Crores)
1	**Operation and Maintenance Cost** (Incl. Salary, O.E., Legal Charges, Taxes, Electricity Charges, Travelling Expences. POL, Miscellaneous Expenses, Repair & Maintenance).	1054.08	1174.93
2	Depriciation	58.81	58.80
3	Annual Revenue Requirement (ARR) **(1+2)**	1112.89	1233.73
4	Revenue at Existing Tariff	94.03	114.54
5	Gap **(3-4)**	1018.86	1119.19
6	Recovery (%) **(4/3 x 100)**	8.45%	9.28%
7	Revision of Tariff **(5/4 x 100)**	1083.55%	977.12%

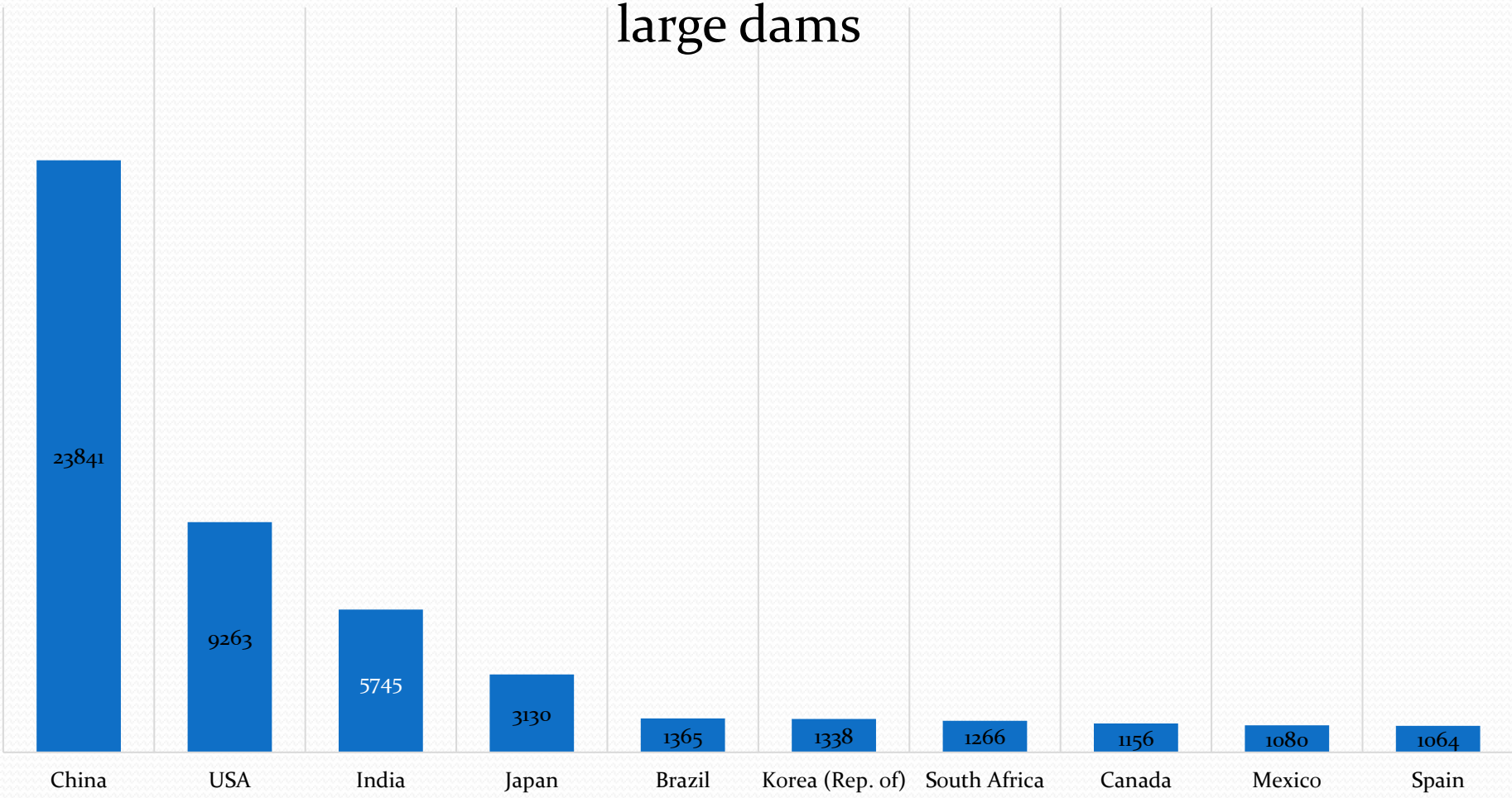
Say 11 times

Note:- An average increase of about 15% over the tariff of the preceding year considering the same percentage increase for future years, the utilities shall be able to recover the ARR (that is aggregate of O&M expenses and depreciation on account of capital cost) over a period of 26 years for PHE sector.

WATER PRICING & DAM SAFETY

Large Dams Worldwide

India has 5334 operational large dams and 411 under-construction large dams



Source: ICOLD & NRLD

Operational Large Dams IN INDIA

STATE	No. of Dams	STATE	No. of Dams
Maharashtra	2,117	Tamil Nadu	118
Madhya Pradesh	899	Jharkhand	55
Gujarat	620	Kerala	61
Chhattisgarh	249	West Bengal	30
Karnataka	230	Bihar	24
Rajasthan	204	Uttarakhand	17
Odisha	200	Himachal Pradesh	19
Telangana	168	Jammu & Kashmir	15
Andhra Pradesh	149	Punjab	14
Uttar Pradesh	117	Other States	28
	TOTAL	5,334	

WHY WE NEED SUCH INITIATIVES?

Dams being huge structures need regular maintenance

- Regular maintenance of dams can avoid need of major Dam rehabilitation schemes
- Due to deferred maintenance most of the old dams are having one or more structural safety risks
- It is said that Rs 1 spent in regular O&M can save Rs 100 spent on rehabilitation.
- Dam safety is public safety, to ensure public safety dam rehabilitation schemes are designed

Reasons for deferred o&m

With 5334 large dams, India stands at 3rd Rank globally in dam nos.

Maintenance of dams need significant funds

There is no regular funding of dams for its routine maintenence

Currently alternative sources of dam safety funding have not been brought well in place.

In present scenario all major dams rehabilitation have been done through external borrowing.

Thank You