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NAMAMI GANGE PROGRAMME

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NAMAMI GANGE PROGRAMME

Introduction

Ganga is considered as the most sacred river in the country with a unique cultural and spiritual significance. It occupies a special place in every Indian's heart. Traversing over 2,500 km, River Ganga is highly venerated and millions of people from its origin in the Gangotri glacier in the Himalayas to the Sunderbans delta in Bangladesh depend on its water for their livelihood.

River Network

The River Ganga originates in the Himalayas with several major head-streams – Alaknanda, Bhagirathi, Bhilangana, Dhauliganga, Mandakini, Nandakini and Pindar, which progressively join together on or before Devaprayag. Descending in the plains, the river flows approximately southeast and is joined by several large streams such as Ramganga, Yamuna, Kosi, Gandak, Gomti, Sone, Karmnasa and Ghaghra to become an immense river in the plains below Allahabad. The river then flows through the Rajmahal hills and divides into two streams. The eastern branch – River Padma – flows southeast through Bangladesh to join the Brahmaputra and Meghna rivers before flowing into the sea. The south-flowing branch – River Hooghly – is joined by Rivers Damodar and Mayurakshi before reaching the sea. The combined outfalls of the two branches together form the world's largest delta (the "Sunderban Delta" covering about 60,000 sq.km.) stretching across Bangladesh and West Bengal. Overall, River Ganga is more than 2500 km long.¹ Diagram of River Ganga and her major tributaries are given in

Annexure I.

Salient Features of River Ganga

Total Length	2525kms
Uttarakhand	450kms
Uttar Pradesh	1000kms
Sharing length between UP & Bihar	110kms
Bihar	405kms

¹ Ganga River Basin Management Plan, 2015, p.17-18.

Jharkhand	40kms
West Bengal	520kms
Catchment Area Ganga Basin	8,61,404 sq km (26.4%) of India
Average Annual Discharge	4,93,400 million cubic meter
Main Tributaries	Yamuna, Ramganga, Gonti, Ghaghara, Gandak, Damodar, Kosi & Kali-East
Main Sub tributaries	Chambal, Sindh, Betwa, Ken, Tons(beyond Five States), Sone & Kasia-Haldi
Major Cities located on the bank	Srinagar, Rishikesh, Haridwar, Roorke(in Uttarakhand), Bijnor, Narora, Kanuj, Kanpur, Allahabad, Varanasi, Mirzapur (in Uttar Pradesh), Patna, Bhagalpur (in Bihar) and Brahrampur, Serampore, Hawarah and Kolkata (in West Bengal) ²

Pollution Level

Rapidly increasing population, rising standards of living and exponential growth of industrialisation and urbanisation have exposed water resources, in general, and rivers, in particular, to various forms of degradation. The mighty Ganga is no exception. The pollution in the Ganga River is caused by both point sources such as domestic & industrial waste water and non-point sources such as agricultural runoff, solid waste dumping, open defecation, left over religious material, etc. The domestic sewage contributes to 70 per cent of the pollution load while industrial waste water contribute to 20 per cent of the overall pollution load. Remaining 10 per cent of the pollution is due to non-point sources as mentioned above.³

Pollution Assessment by Central Pollution Control Board (CPCB)⁴

Pollution Type	Description
Municipal Sewage	As per CPCB, about 2723.3 mld of sewage is disposed in river Ganga from 36 Class I & 14 Class II towns, against which a treatment capacity of about 1208.8 mld has been created.

² Pollution Assessment: River Ganga, Central Pollution control Board, 2013, p.2.

³ 15th Report of the Committee on Estimates on Ganga Rejuvenation (2016-17), p.27.

⁴ *Ibid.* p.27

Industrial Pollution	669 MLD of industrial waste water is discharged from 1109 Grossly polluting industries (GPI) on main stem of the river Ganga. The main industrial sectors responsible for pollution in Ganga are; Sugar, Distillery, Pulp and Paper, Tannery, and textile etc.
Open defecation	As per 2011 census, 33.64 Lacs households in the five main states do not have an access to toilet facilities and out of these 28.91 Lacs households defecate openly and 4.72 have an access to community toilets. Ministry of Drinking Water & Sanitation has been implementing the scheme of Open Defecation Free (ODF) Zone for Rural areas along the banks of river Ganga under their Swachh Bharat Mission (SBM)-Gramin Programme. Out of 4470 Ganga villages identified by them 4464 villages have been declared ODF. A total of 977725 Individual House Hold Latrines (IHHLs) have been constructed which are eligible for financial aid and the Center's share for the same comes to Rs. 1012 crores approx.
Use of fertilizers	Eleven Ganga Basin states consume 10 million tons of chemical fertilizers per year, which constitutes 45% of the total chemical fertilizer consumption of the country leading to disposal of high levels of nitrogen and phosphorus. As per estimates, run off from arable lands contains up to 70mg/l of nitrogen and phosphorus ranging from .05-1.1 mg/l, with potential to raise the nutrient level to a considerable degree in stream waters.
Solid waste	About 14000 metric tons per day of Municipal Solid Waste has been estimated to be generated from Class-I and Class-II cities/towns situated on the main stem of Ganga.

Water Quality

The Ganga River is famous for its purity and its unique capacity for self purification due to high dissolved oxygen contents and radioactive radon reported in the river water by some workers. The river also supports a large population of macrophages- parasites, which according to some, multiply exponentially by attacking bacteria. But reduced flows of the Ganga and Yamuna with diminished dissolved oxygen, discharge of untreated industrial and municipal waste and effluents into the river, as also agricultural runoffs have much to do with degraded Ganga's self cleaning capacity and river water quality.

Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), fecal Colifor count (FCC) are some of the determinants

of the river water quality. Sewage and Industrial wastes containing oxidisable organic matter exert a demand on dissolved oxygen, thereby reducing DO content of the river. BOD indicates biochemically degradable organic content at the expense of DO. COD indicates total organic content of water. Adequate reserve of Oxygen (DO) in the river water supports biochemical oxidation, while lack of it triggers anaerobic breakdown of organic matter and septic condition of the river⁵.

The four stretches of river Ganga where Biological Oxygen Demand (BOD) levels are more than permissible limits, as monitored by CPCB is given below⁶.

State	Stretch	Identified Length of Stretch (km)	BOD range/ max value (mg/l)
Uttarakhand	Haridwar to SultanpurAdampu	10	4.2-5.8
Uttar Pradesh	Kannauj to Varanasi	450	3.8-16.9
Bihar	Buxar to Bhagalpur	40	7.8-2.7
West Bengal	Tribeni to Diamond Harbour	50	3.1-5.8

In other stretches, BOD levels are within permissible limits i.e. ≤ 3 mg/l. However, as per monitoring reports of CPCB, entire stretch of river Ganga has high levels of faecal coliform against the prescribed limits.

Measures to improve water quality

Ganga Action Plan (GAP) Phase-I and Phase-II

The Ganga Action Plan (GAP) Phase-I was launched as a centrally funded scheme in 1985 and later Ganga Action Plan (GAP) Phase-II was initiated in 1993 with the objective of improving the water quality of river Ganga. Various pollution abatement schemes including interception & diversion of sewage and setting up of sewage treatment plants were taken up under the Plan. Under both phases of GAP, a total of 575 schemes have been sanctioned for undertaking pollution abatement activities in the identified polluted stretches of the river Ganga, of which 524

⁵ *Ibid*, p.132.

⁶ Lok Sabha Unstarred Question No. 3032, dated 03 August 2017.

schemes with a capacity to treat pollution load of 1098 million litres per day (mld) have been established under GAP-I and II respectively.⁷

National Ganga River Basin Authority (NGRBA)

The NGRBA has been established through the Gazette notification of the Government of India (Extraordinary) No. 328 dated 20 February 2009 with the objectives of (a) ensuring effective abatement of pollution and conservation of the river Ganga by adopting a river basin approach to promote inter-sectoral co-ordination for comprehensive planning and management; and (b) maintaining environmental flows in the river Ganga with the aim of ensuring water quality and environmentally sustainable development.

NGRBA is mandated to take up regulatory and developmental functions with sustainability needs for effective abatement of pollution and conservation of the river Ganga by adopting a river basin approach for comprehensive planning and management. The authority is chaired by the Prime Minister and has as its members the Union Ministers concerned, the Chief Ministers of the States through which Ganga flows, viz., Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal, among others.

NGRBA functions include development of a Ganga River Basin Management Plan, regulation of activities aimed at prevention, control and abatement of pollution, to maintain water quality and to take measures relevant to the river ecology in the Ganga basin states. It is mandated to ensure the maintenance of minimum ecological flows in the river Ganga and abate pollution through planning, financing and execution of programmes.

National Mission for Clean Ganga (NMCG)

The NMCG was registered as a society on 12 August 2011 under the Societies Registration Act 1860. It acted as implementation arm of National Ganga

⁷ Reply to Lok Sabha Unstarred Question No. 786 dated, 16 July 2014

River Basin Authority (NGRBA). The aims and objectives of the society were to implement the work programme of NGRBA and assist the Ministry of Environment and Forests (MoEF) in accomplishing the mandate of NGRBA.

National Council for Rejuvenation, Protection and Management of River Ganga

The NGRBA was dissolved with effect from the 7 October 2016, consequent to constitution of the National Council for Rejuvenation, Protection and Management of River Ganga *vide* notification no. *S.O. 3187(E) dt. 7th October 2016* under the Environment (Protection) Act, 1986, which empowers NMCG to discharge its functions in an independent and accountable manner.

The National Council is to follow the following principles in taking measures for the rejuvenation, protection and management of River Ganga, namely:

- (I) the River Ganga shall be managed as a single system;
- (II) the restoration and maintenance of the chemical, physical, and biological quality of the waters of River Ganga shall be achieved in a time bound manner;
- (III) the River Ganga shall be managed in an ecologically sustainable manner;
- (IV) the continuity of flow in the River Ganga shall be maintained without altering the natural seasonal variations;
- (V) the longitudinal, lateral and vertical dimensions (connectivities) of River Ganga shall be incorporated into river management processes and practices;
- (VI) the integral relationship between the surface flow and sub-surface water (ground water) shall be restored and maintained;
- (VII) the lost natural vegetation in catchment area shall be regenerated and maintained;
- (VIII) the aquatic and riparian biodiversity in River Ganga Basin shall be regenerated and conserved;
- (IX) the bank of River Ganga and its flood plain shall be construction free Zone to reduce pollution sources, pressures and to maintain its natural ground water recharge functions;
- (X) the public participation in rejuvenation, protection and management, revision and enforcement of any regulation, standard, effluent limitation plan, or programme for rejuvenation, protection and management shall be encouraged and made an integral part of processes and practices of

A five tier structure has been created through the Order No *S.O. 3187(E)* dated *7th October 2016* invoking the provision under Section 3 of Environment (Protection) Act, 1986 at the national, state and district level to take measures for prevention, control and abatement of environmental pollution in river Ganga and to ensure continuous adequate flow of water so as to rejuvenate the river Ganga as below:⁸

1. National Ganga Council under chairmanship of Hon'ble Prime Minister of India,
2. Empowered Task Force (ETF) on river Ganga under chairmanship of Hon'ble Union Minister of Water Resources, River Development and Ganga Rejuvenation,
3. National Mission for Clean Ganga (NMCG),
4. State Ganga Committees, and
5. District Ganga Committees in every specified district abutting river Ganga and its tributaries in the States.

Namami Gange Programme

The Namami Gange programme was introduced in 2014 as an umbrella programme, with the aim of integrating previous and currently ongoing initiatives by enhancing efficiency, extracting synergies and supplementing them with more comprehensive & better coordinated interventions. The Cabinet approved the Namami Gange programme on 13 May 2015 for Rs. 20,000 crore for 5 years (2015-20). This is a significant four-fold increase over the expenditure in the past 30 years (Government of India incurred an overall expenditure of approximately Rs. 4000 crore on this task since 1985).

Marking a major shift in implementation, the Government is focusing on involving people living on the banks of the river to attain sustainable results. The programme also focuses on involving the States and grassroots level institutions such as Urban Local Bodies and Panchayati Raj Institutions in implementation. The program would be implemented by the National Mission for Clean Ganga (NMCG), and its State counterpart organizations *i.e.*, State Program Management

⁸ Official Website of National Mission for Clean Ganga

Groups (SPMGs). NMCG can issue such directions in writing as it may consider necessary for abatement of pollution and rejuvenation, protection and management of the River Ganga to the concerned authority or local authority or other authorities or Board or Corporation or person and they shall be bound to comply with such directions. The NMCG will also establish field offices wherever necessary. In order to improve implementation, a three-tier mechanism has been proposed for project monitoring comprising of (a) High level task force chaired by Cabinet Secretary assisted by NMCG at national level, (b) State level committee chaired by Chief Secretary assisted by SPMG at State level and (c) District level committee chaired by the District Magistrate.

In order to ramp up progress, the Centre will now take over 100 percent funding of various activities/ projects under this program. Taking a leaf from the unsatisfactory results of the earlier Ganga Action Plans, the Centre now plans to provide for operation & maintenance of the assets for a minimum 10 year period, and adopt a Public Private Partnership (PPP)/Special Purpose Vehicle (SPV) approach for pollution hotspots. In an attempt to bolster enforcement, the Centre also plans to establish a four battalion Ganga Eco-Task Force, a Territorial Army unit, apart from contemplating on a legislation that aims to check pollution and protect the river.

The program emphasizes on improved coordination mechanisms between various Ministries/Agencies of Central and State Governments. Major infrastructure investments which fall under the original mandate of other ministries *viz.* Urban Development (UD), Drinking Water & Sanitation (DWS), Environment, Forests & Climate Change (EF&CC) etc., will be undertaken in addition.

The Namami Gange will focus on pollution abatement interventions namely interception, diversion & treatment of wastewater flowing through the open drains through bio-remediation/appropriate in-situ treatment/use of innovative technologies/sewage treatment plants (STPs)/effluent treatment plant (ETPs);

rehabilitation and augmentation of existing STPs and immediate short term measures for arresting pollution at exit points on river front to prevent inflow of sewage, etc.

Significantly the approach is underpinned by socio-economic benefits that the program is expected to deliver in terms of job creation, improved livelihoods and health benefits to the vast population that is dependent on the river.⁹

Projects under *Namami Gange* Mission

The Namami Gange Programme covers short term, medium term and long term activities. Under short term activities certain entry level activities which covers development of Ghat crematoria & river surface cleaning activities, etc. have been taken up. Under medium term activities existing sewage treatment plants (STPs) and effluent treatment plants (ETPs) are being upgraded and new STPs and ETPs are being established. Beside, rural sanitation has been taken up in the villages on the banks of river Ganga. The long term action plan involves restoration of wholesomeness of river Ganga, and maintaining the ecological and geological integrity of river.

The short term and medium term projects are likely to be completed by 2020. Under the Namami Gange Programme a total of 163 projects for various activities such as sewage infrastructure, river front development, ghat and crematoria, ghat cleaning, rural sanitation, etc. have been sanctioned.¹⁰ Project status as on 31st October 2017 is given in **Annexure-II**. The funds allocated/released by National Mission for Clean Ganga (NMCG) to the States/CPSUs/other agencies under Namami Gange Mission so far from Financial year 2014-15 to 2017-18 till 31st October, 2017 is given in **Annexure III**.

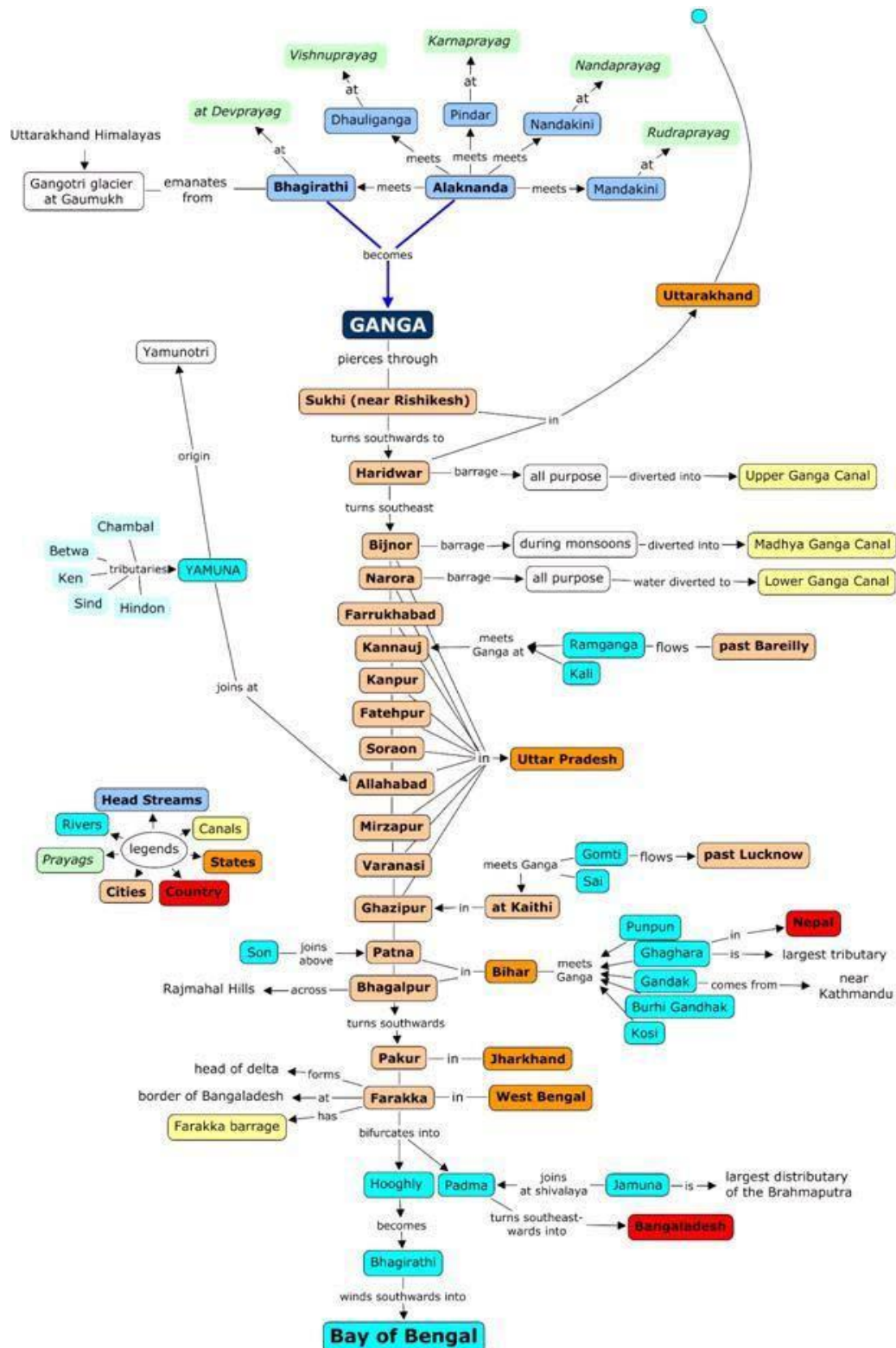
⁹ PIB-Press Release dated, 13 May 2015

¹⁰ Reply to Lok Sabha Unstarred Question No. 3082 dated, 03 August 2017

Sources Consulted

1. Ganga River Basin Management Plan, 2015.
2. Pollution Assessment: River Ganga, Central Pollution Control Board, Delhi, July 2013.
3. Fifteenth Report of the Committee on Estimates on Ganga Rejuvenation (2016-17), Lok Sabha Secretariat, New Delhi.
4. Conservation of Water Quality of River Ganga, A segmental Approach, CPCB, 2016.
5. Official websites of the National Mission for Clean Ganga (<http://nmcg.nic.in/index.aspx>).
6. Notification no. *S.O. 3187(E) dated 7th October 2016* Ministry of Water Resources, River Development, and Ganga Rejuvenation, The Gazette of India, 7.10. 2017
7. Reply to Lok Sabha Questions.
8. PIB-Press Releases.
9. Inputs from the National Mission for Clean Ganga, Ministry of Water Resources, River Development & Ganga Rejuvenation dated 15 November 2017.

Course Of Ganga



Annexure -II

Projects Status as on 31st October 2017									
Sl No	Projects Undertaken	No of Projects	Sanction Cost (Rs in Cr)	No of Projects Completed	No of Projects Under Progress	No of Projects Under Tendering	AA& ES issued	Revised AA&ES	Total Expenditure (Rs in Cr)
Sewage Infrastructure									
1	Sewage Infrastructure	93	14063.01	18	28	39	7	1	2347.98
Entry Level Activities									
2	Old Ghats & Crematoria (Projects under NRCP/NGRBA-in State of West Bengal)	24	204.39	24	0	0	0	0	180.16
	Ghats & Crematoria(New Projects under Namami Gange Programme)	37	1164.02	0	21	14	2	0	45.24
3	Ghats Cleaning	1	5.00	0	1	0	0	0	4.42
4	River Surface Cleaning	1	55.24	0	1	0	0	0	0.00
	Sub Total	63	1428.65	24	23	14	2	0	229.82
River Front Development									
5	River Front Development	4	324.56	0	3	1	0	0	158.40
Institutional Development (Non -Infrastructure)									
6	GKC	2	48.54	1	1	0	0	0	2.15
7	GMC	1	46.69	0	0	0	1	0	0.00
8	CPCB	3	202.28	0	3	0	0	0	19.03
	Sub Total	6	297.51	1	4	0	1	0	21.18
Project Implementation Support/Research & Study Projects									
9	Educating Schools & Communities for conserving habitat of Ganga River Dolphin	1	1.28	1	0	0	0	0	1.11
10	Preparation of DPR of Forestry Intervention for Ganga	1	1.18	1	0	0	0	0	1.19
11	Assessment of Water Quality & Sediment Analysis to understand the special property of river	1	5	1	0	0	0	0	2.81

	Ganga								
12	A Detail Study to Understand the Non-Putrefying Property of River Ganga in both Water & Sediment	1	4.96	0	0	0	1	0	0.00
	Sub Total	4	12.42	3	0	0	1	0	5.11
Biodiversity									
13	Assessment of fish & fisheries of the Ganga river system for developing suitable conservation & restoration plan	1	5.80	0	1	0	0	0	1.42
14	Biodiversity Conservation	2	24.83	0	2	0	0	0	10.23
	Sub Total	3	30.63	0	3	0	0	0	11.65
Afforestation									
15	Afforestation	10	112.10	0	10	0	0	0	78.94
Rural Sanitation-UNDP									
16	Rural Sanitation-UNDP	1	127.83	0	1	0	0	0	5.00
Composite Ecological Task Force									
17	Composite Ecological Task Force	1	167.00	0	0	0	1	0	0.00
Bioremediation									
18	Bioremediation	2	1.63	0	0	0	2	0	0.00
Solid Waste Management									
19	Solid Waste Management	1	66.08	0	0	0	1	0	0.00
GrandTotal		188	16631.42	46	72	54	15	1	2858.08

Annexure-III

Funds Allocated Released NMCG to the States/CPSUs/Other Agencies under Namami Gange from 2014-15 to 2017-18 (Rs.In crore)				
	2014-15	2015-16	2016-17	2017-18*
B. Break up of Expenditure/Releases				
1. Agencies /States				
Bihar		120.23	82.03	14.20
Jharkhand	0.97	27.83	46.18	7.57
UP	74.58	147.58	587.17	105.74
Uttarakhand	4.26	30.26	30.66	66.98
West Bengal	73.85	185.79	114.25	4.13
Haryana		30.00	52.73	
Delhi		4.96	2.17	47.86
Madhya Pradesh		3.39	6.50	
Rajasthan			20.00	
Sub Total	153.66	550.04	941.69	246.48
B. Release to CPSUs & Other Implementing Agencies				
EIL		5.77	15.73	31.51
NBCC		4.00	0	7.08
WAPCOS		6.78	13.31	13.72
NPCC			3.35	6.59
EPIL			3.00	0.00
CPCB		1.86	6.94	8.35
Wild Life Institute			10.23	0.00
Centre for Environment Engg,Lucknow	0.25	0.35	0.89	0.00
NEERI,Nagpur		1.68	2.81	0.49
Forest Research Institute		1.33	0	0.00
CIFRI		0.01	0.68	0.74
NYKS				4.00
PCDA(GTF)				30.34
Sub Total (B)	0.25	21.78	56.94	102.81
Grand Total(A+B+C)	153.91	571.82	998.63	349.29

* For the year 2017-18 Expenditure is upto 31.10.2017

Sewerage Infrastructure Projects Approved

Particulars	Till May 2014	May 2014 to Oct 2016	Since Oct 2016 till date	In Pipeline
No. of Projects	34	13	46	2
Amount Sanctioned (Rs in Cr)	3581.34	2005.46	7744.39	148 (Tentative Cost)
STP capacity to be created (MLD)	583.03	149.30	1512.85	17
STP Capacity to be created by rehabilitation (MLD)	92	410	82	
Sewer Network to be laid (Km)	2217.24	1446.74	1485.51	
Hybrid Annuity projects	Nil	Nil	13	