DRAFT POLICY ON

WASTEWATER RECYCLE AND REUSE

IN

URBAN LOCAL BODIES, UTTAR PRADESH

1 BACKGROUND

Water, food, and energy scarce are emerging as increasingly important and vital issue for the nation and the world. Out of which "water" is most essential for the existence of all living organisms but it is a fact in the **scenario** of India that more than 18 percent of world population lives here and only 4 percent of world renewable water resources and 2.45% world land area are here. Most of the river basins in the country and elsewhere are closing or closed and experiencing moderate to serve water shortage brought on big the simultaneous effects of agricultural growth, industrialization, urbanization current and future freshwater demand could be met by on housing water use efficiency and demand management. Thus, wastewater/low-quality water is emerging from potential source for demand management, after essential treatment. The Indian economy and society face daunting challenges in the water sector. The demands of a rapidly industrializing economy and urbanizing society come at a time when the potential for augmenting supply limits, water tables are falling down and water quality issues have increasingly come to the fore. Our rivers and groundwater are polluted by untreated effluents and sewage continue to be dumped into them. Climate change poses fresh challenges with its impacts on the hydrologic cycle.

1.2 **“The 2030 Water Resources Group-2009"** estimates that if the current pattern of water demand in the country continues, about half of the demand for water will be unmet by 2030. As such, efforts are required for effective and efficient water management to satisfy the various sector needs in the years to come. Wastewater recycles and reuse provides an opportunity to alleviate some of this stress. A direct measure of water availability is the annual availability per capita according to which geographical regions are classified as water sufficient, water stressed and water short, when the annual per capita availability of utilizable

water is calculated to be in excess of 1500 cum; between 1500-1000 cum and less than 1000cum respectively. By this yardstick, as per provisional census 2011, a total of 1210 million, the availability of water reduces to 928 cubic meters per capita, which is water short. The increased demand for drinking water for urban centers, increasing water footprint of these locations and continued pollution of fresh water sources due to inadequate capture and treatment of the return flows, is a statement of challenge and also a window of opportunity to use the wastewater for productive use. Technological advances over the last two decades have demonstrated the feasibility of treating wastewater to necessary quality levels at comparative costs. The increasing costs of alternative resources seem to suggest that the time has come to examine wastewater reuse as a potential option and view wastewater as an asset. Water recycling is synonymous of water reclamation and water reuse after treating municipal wastewater or sewage for the recycled water has many applications and can be used to fulfill the most type of water needs, subject to the level of treatment provided to wastewater. Reusable wastewater from residential commercial and industrial bathrooms, shrinks, bathtub, shower, drains and clothes washing, equipment drains etc. is commonly named as gray water and reusable after proper treatments.

2- **Need for State Level Policy for wastewater Recycling & Reuse-**

In the 12th schedule of the Indian constitution, it is a function of municipalities to provide the safe water supply and hygienic sanitation facilities to urban citizens. Municipalities are performing this function of the supply of safe drinking water as per their capacity in municipal areas. However, about 80% water used by the urban community comes out of houses in the form of wastewater which unless properly collected, conveyed, treated and safely disposed off may eventually pollute our precious water resources and cause environmental degradation and disease-causing pathogens. The volume of wastewater generation, combined with the decreased volumes of fresh water available for drinking water supply, irrigated agriculture, and industries caused the state of Uttar Pradesh to consider the adoption of source substitution and wastewater reuse, recycle policy. So safe disposal of wastewater is much more important. This can be at an individual, property level or at group housing level. For better performance the function of water supply in the urban area. It is

urgent need of the hour to establish/ notifies the policy for wastewater recycles and reuse in all urban areas of the state of Uttar Pradesh.

3 Introduction of Wastewater Recycling & Reuse

3.1 The water is a natural resource, as a gift of God to all floras and faunas on earth. However, Nation is facing serious environmental issues as a result of rapid economic growth, urbanization, and population growth, which includes pollution in urban and industrial areas and resource constraints with respect to water, land, forests, and energy. Growing water scarcity and water pollution are the most severe environmental problems, in addition, scanty rainfall due to climate change has had a compounding effect on these resources, Erratic and unfavorable monsoon conditions have led to over-exploitation of groundwater resources. Less than normal precipitation has resulted in less accumulation of fresh water. The low level of water inflow coupled with increased exploitation has resulted in depleting water levels in reservoirs and rivers.

3.2 The state of Uttar Pradesh is having 653 Urban Local Bodies which includes Municipal Corporation, Municipal Council, and Nagar Panchayat and witnessing similar status quo, while the growth of the state is both desired and encouraged, water demands have increased beyond the capacity of the local water resources. A significant deficit exists between the potable water supply and water demands in the state. The water supply in the Urban Local Bodies of the State has been restricted to several hours per day. Even though State and ULBs with the aid of Central Govt. programs like JnNURM & AMRUT are taking steps to increase the city's water supply, the gap between demand and supply of water is projected to continue to increase in the future. The gap is a meet out the big challenge as water has become a scarce commodity, and the resulting demand for clean water continues to grow at a fast pace. An estimated gap between demand and supply of piped water supply in the cities of the state having a population more than One lac, calculated in Service Level Improvement Plan (SLIP) under AMRUT as shown under in table given below: -

Sector: Water Supply

Sl.No.	Name of City	House Holds Coverage											Base level HH coverage % As per SLIP	Perposed Coverage %			HH Tap water connection till 2020	Deficit in coverage	Base supply level (LPCD)	Proposed Supply Level	HH anticipated coverage till 2020	2015-16	2016-17	Bal.	Perposed Coverage in under different SAAP			
		Total No. House Holds (HH Coverage)	Total with in the premises	Having Tap water Connection	illegal connections		As per Census 2011	HH As per NPP Recard 2015	HH Tap water connection as per NPP	HH Tap water connection as per Census	HH Tap water connection as per NPP			2015-16	2016-17	2017-2020									2017-18	2018-19	2019-20	Total 2017-20
					No.	%																						
1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
1	Agra	352850	186465	118641	67824	19	240831	352850	170000	136307	170000		48.00	56	59	80	282280	21.78	176		27263	27263	10919	74098	14000	42000	18098	74098
2	Aligarh	143062	106357	44223	62134	43	143062	127789	52830	53380	52830		36.90	51	62	70	89452		90	135	20655	20655	5744	10223	2000	6000	2223	10223
3	Allahabad	195259	137430	126903	10527	5	155071	195259	152617	135988	152617		78.00	81	85	95	185496	9.61	226		6093	6093	7260	19526	3000	9000	7526	19526
4	Bareilly	141590	156861	85259	71602	51	164522	141590	66398	87140	66398		47.00	51	52	65	92034		126	135	16703	16703	0	0	0	0	0	0
5	Firozabad	101745	53911	28747	25164	25	101745	60372	40562	36120	40562		39.86	40	41	75	45279	34.27	214		0	0	0	0	0	0	0	0
6	Ghaziabad	323380	277484	181128	96356	30	323380	275998	222573	189955	222573		68.82	85	88	90	248398		120	150	53431	53431	0	0	0	0	0	0
7	Gorakhpur	126735	100656	40612	60044	47	112114	126735	76060	43130	76060		60.00	66	67	80	101388		135		7579	7579	1273	16476	4000	10000	2476	16476
8	Jhansi	106515	65254	44169	21085	20	88884	106515	37445	49520	37445		35.00	60	66	80	85212	14.20	126	135	26841	26841	6014	14912	2000	3000	9912	14912
9	Kanpur	486382	331990	171323	160667	33	486382	450000	255000	196652	255000		52.00	58	60	75	337500	6.97	210		12753	12753	2247	67500	10000	30000	27500	67500
10	Lucknow	512519	421938	330772	91166	18	512519	482258	323585	330772	323585		63.14	91	93	95	458145		189		147134	147134	0	0	0	0	0	0
11	Merrut	232144	53911	28747	25164	11	101745	232144	117526	36128	117526		50.63	63	70	90	208930	19.16	175		35356	35356	9619	46429	10000	20000	16429	46429
12	Moradabad	160319	145013	69188	75825	47	154364	160319	86097	72307	86097		54.00	57	58	65	104207		186		49420	49420	0	0	0	0	0	0
13	Saharanpur	126156	117416	66238	51178	41	126156	80070	40277	68548	40277		32.00	51	55	65	52046	4.43	134		9620	9620	2149	0	0	0	0	0
14	Varanasi	180805	157084	120331	36753	20	180805	150236	100208	127940	100208		67.00	90	93	95	142724		206	2975	50028	50028	0	0	0	0	0	0
15	Akbarpur	22705	2848	978	1870	8	17007	22705	5250	1184	5250		23.12	41	45	95	21570	46.76	76	135	6116	6116	0	10204	2000	7000	1204	10204
16	Amroha	35480	31314	11126	20188	57	33472	35480	11199	11571	11199		31.56	90	90	90	31932		45	135	24281	24281	0	0	0	0	0	0
17	Ayodhya	7885	5380	4150	1230	16	7885	7885	5010	5010	5010		63.54	0	0	95	7491	84.40	148		0	0	0	2461	2461	0	0	2461
18	Azamgarh	18997	12511	6070	6441	34	15428	18997	9536	6771	9536		50.19	58	62	70	13298	4.09	196		3094	3094	0	668	668	0	0	668
19	Bahraich	28464	27509	7547	19962	70	30061	28464	14772	7866	14772		52.00	58	60	70	19925		106	135	3830	3830	1323	0	0	0	0	0
20	Ballia	18718	13302	6304	6998	37	15901	18718	4783	7027	4783		25.55	35	36	65	12167	26.61	138		1876	1876	79	5429	1000	2000	2429	5429
21	Banda	23241	19923	14917	5006	22	28748	23241	15230	17591	15230		53.00	64	80	85	19755		199		4343	4343		182	182	0	0	182
22	Baraut	18615	14646	9175	5471	29	17506	18615	11858	10182	11858		63.70	70	73	75	13961		190		1853	1853		250	250	0	0	250
23	Basti	21842	14690	4723	9967	46	17610	21842	15387	5500	15387		70.44	80	80	80	17474		191		1826	1826	261		0	0	0	0
24	Budaun	26851	25056	4168	20888	72	29202	26851	10913	4682	10913		37.83	60	64	75	21638		216		2669	2669	4883	3173	800	1500	873	3173
25	Bulandshahar	45168	36523	18615	17908	40	40062	45168	14853	19799	14853		32.88	37	38	65	29359		162		1904	1904	407	12195	2000	5000	5195	12195
26	Chandausi	22280	18229	7343	10886	49	19936	22280	8952	7844	8952		40.17	44	46	60	13368	5.14	100	135	881	881	416	3119	700	1500	919	3119
27	Deoria	19500	17123	5429	11694	60	18543	19500	6500	5771	6500		33.33	39	40	50	9750	0.03	62	135	1076	1076	224	1950	400	500	1050	1950
28	Etah	20303	16760	5798	10962	54	20303	20303	6880	6880	6880		33.89	42	46	55	11167	0.01	203		1698	1698	761	1828	500	800	528	1828
29	Etawah	44601	32090	21242	10848	24	42423	44601	26609	24719	26609		59.66	72	75	80	35681	0.68	140		6856	6856		2216	0	0	2216	2216
30	Faizabad	31879	24141	10529	13612	43	28179	31879	22315	11198	22315		70.00	92	92	92	29329		145		9564	9564	1506		0	0	0	0
31	Farrukhabad-cum-Fatehgarh	50253	24318	9701	14617	29	47076	50253	23411	11818	23411		46.58	80	85	85	42715		120	135	16970	16970	2334	0	0	0	0	0
32	Fatehpur	33605	24939	16675	8264	25	33605	20251	14562	18933	14562		43.00	45	46	75	15188	29.41	143		2462	2462	0	0	0	0	0	0
33	Ghazipur	18570	15203	10951	4252	23	18158	18570	10312	11773	10312		55.53	63	67	80	14856	10.10	300		2133	2133	0	2411	1000	1411	0	2411
34	Gonda	19022	17061	8652	8409	44	18456	19022	7023	9035	7023		36.92	42	45	60	11413	10.79	281		866	866	671	2853	1500	1353	0	2853
35	Hapur	43801	40285	16151	24134	55	44742	43801	14834	17107	14834		34.00	90	92	92	40297		91	135	28967	28967	0		0	0	0	0
36	Hardoi	23184	29573	9858	19715	85	32608	23184	8272	10366	8272		35.68	43	45	60	13910		90	135	11357	11357	0		0	0	0	0
37	Hathras	24986	19188	7760	11428	46	24686	24986	8840	9439	8840		35.30	44	49	55	13742		100	135	2749	2749	654	1499	700	799	0	1499
38	Jaunpur	34616	30616	18485	12131	35	34616	34616	18485	18485	18485		60.00	94	95	95	32885		112	135	16131	16131	0	0	0	0	0	0
39	Kasganj	18850	14470	7717	6753	36	16953	18850	8453	8092	8453		44.84	54	66	70	13195		96		1667	1667	2321	754	754	0	0	754
40	Khurja	14756	20665	5044	15821	107	22868	14756	5975	5337	5975		40.49	92	93	93	13723		158		8781	8781	0	0	0	0	0	0
41	Lakhimpur	28838	23548	10474	13074	45	27046	28838	14195	11577	14195		49.22	55	58	65	18745		140		4187	4187	4990	0	0	0	0	0
42	Lalitpur	23644	14381	9722	4659	20	23414	23644	10429	11192	10429		44.00	65	76	85	20097	4.30	237		4942	4942	2722	2004	1000	1004	0	2004
43	Loni	91138	63370	17115	46255	51	91138	91138	18775	21912	18775		20.60	82	83	83	75645		88	135	57048	57048	0	0	0	0	0	0
44	Mainpuri	29800	18153	8188	9965	33	23741	29800	9600	9827	9600		32.21	42	42	80	23840	24.56	123	135	4627	4627	0	9613	3000	4000	2613	9613
45	Mathura	75529	42908	19332	23576	31	55086	75529	44829	23373	44829		59.35	66	86	90	67976		126	135	5535	5535	14591	3021	1500	1521	0	3021
46	Maunath	43757	33460	11030	22430	51	39742	43757	17500	11917	17500		40.00	48	50	55	24066		96	135	4626	4626	2827	0	0	0	0	0
47	Mirzapur-cum-vindhyachal	34029	25580	19157	6423	19	38309	34029	20067	24877	20067		59.00	92	92	92	31307		105	135	13962	13962	0	0	0	0	0	0
48	Modinagar	23750	21742	12614	9128	38	23523	23750	17103	13494	17103		72.00	73	73	75	17813		191		0	0	235	475	475	0	0	475
49	Mughalsarai	22200	13180	5212	7968	36	16638	22200	5105	5583	5105		22.99	34	37	75	16650	27.11	76	135	2358	2358	751	8436	2000	3000	3436	8436
50	Muzaffarnagar	68906	65795	44048	21747	32	69333	68906	45159	45234	45159		65.53	70	71	75	51680		191		1799	1799	1965	2757	1500	1257	0	2757
51	Orai	33586	27705	12324	15381	46	32850	33586	12494	13907	12494		37.00	40	43	65	21831	11.20	157		2377	2377	0	6960	0	0	6960	6960
52	Pilibhit	24543	23808	11583	12225	50	24543	24500	12436	11840	12436		50.67	5	40	92	22540	10.19	117	135	4620	4620	0	5484	0	0	5484	5484
53	Raibareli	40384	22700	10984	11716	29	33957	40384	19445	12418	19445		48.00	58	75	72	29076		66	135	0	0	10843	0	0	0	0	0
54	Rampur	58285	55678	22065	33613	58	57944	58285	10200	22411	10200		17.50	25	27	42	24480	15.33	135		0	0	5537	8743	2000	4000	2743	8743
55	Sahmbhal	34210	31765	8986	22779	67	34089	34210	8622	9716	8622		25.20	33	35	40	13684		105	135	0	0	3352	1710	1710	0	0	1710
56	Shahjahanpur	58159	50594	9713	40881	70	56032	58159	33939	10513	33939		58.00	64	66	75	43619		59	140	14095	14095	0	0	0	0	0	0
57	Shamli	26562	16967	11565	5402	20	18697	26562	14774	11900	14774		55.62	59	62	80	21250	17.66	179		2600	2600	0	3876	0	0	3876	3876
58	Shikohabad	22075	14205	4724	9481	43	18207	22075	5992	5381	5992		26.96	42	46	60	13245	11.05	125	135	3203	3203	0	4050	0	0	4050	4050
59	Sitapur	23792	24268	12284	11984	50	28172	23792	8942	13291	8942		37.50	48	52	65	15465		89	135	5559	5559	2729	0	0	0	0	0
60	Sultanpur	21471	14670	10740	3930	18	17783	21471	11327	11471	11327		52.75	61	65	85	18250	16.70	141		1798	1798	831	4294	1000	2294	1000	4294
61	Unnao	30298	11330	10011	1319	4	31042	30298	9433	10011	9433		33.13	32	32	96	29086	63.65	102		0	0	262	19391	10000	9391	0	19391
	Total:	**4694592**	**3476144**	**1987265**	**1488886**	**43**	**4328928**	**4433875**	**2401768**	**2149723**	**2372068**		**46.11**	**3537**	**3785**	**4650**	**3553240.31**	**548.20**	**8788**	**6525**	**760183**	**760184**	**112723**	**381189**	**84145**	**168357**	**128766**	**381190**

3.3 Wastewater generations have increased along with the increase in water consumption and the quantity of untreated wastewater discharge into local lakes and rivers has resulted in their becoming polluted and unattractive for most beneficial uses. The strain on water resources has led to excessive pumping of groundwater and groundwater levels are dropping fast. The ever-increasing urban population coupled with poor sanitation facilities has put a severe strain on freshwater resources, such as rivers, lakes, and aquifers. Industrialization and economic growth have increased the demand for fresh water while inadequate management and treatment of industrial and domestic wastewater has polluted such water sources, the combined effect of these has not only resulted in scarce and dwindling resources but has also made it difficult for cities to meet their increasing water needs. To bridge the gap between demand and supply of water in executing the Water Projects and to augment the deficient water resources, cities need to adopt innovative ways such as the rainwater harvesting and recycle/reuse of wastewater. There is need a paradigm shift to view wastewater as a valuable supplemental source for various applications, such as non-potable municipal and industrial interventions. However, mechanisms to monitor the benefits and revenue generation need to be established to effectively implement and derive the benefits from reuse and recycle besides the public health and environmental benefits which are paramount. Implementation of recycle and reuse water projects immensely demands on the site conditions financial cost-benefit analysis and stakeholder's acceptance.

4 The Policy Rationale

4.1 The rationale behind the adoption of the wastewater reuse, recycle policy by the state of Uttar Pradesh entails for following:

a) Coping with the water scarcity situation
b) Protecting the public health and the environment
c) Water allocation and movement among sectors also need to be driven by economic motives
d) Applying the Integrated Water Resources Management (IWRM) approach and best practices
e) Considering the Policy as part or mitigation measures of the effect of climate change
f) Increasing the amounts of treated wastewater(WW) and considering it as a potential water and revenue source

4.2 The Indian standards and regulations specify the quality of treated effluents allowed to be discharged or destined for reuse in various urban reuses; where there will be a requirement for a secondary level of treatment. Quality specifications should be in harmony with World Health Organization (WHO) guidelines for the safe use of treated effluent.

5- Benefits of wastewater Recycling

Instituting wastewater recycling presents several advantages to the state of Uttar Pradesh.

a) It reduces the demand for conventional water and sewerage infrastructure. It is important to note here that these costs are not excessive and in fact less than what would be required to build, extend and operate a conventional sewerage system. State money saved can then be redirected for other purposes- expanding access to piped water and sanitation, for example.
b) Wastewater recycling conserves water depending on the extent of the treatment and reuse possibilities, water usage can be cut by 20-50%. Uttar Pradesh has the opportunity to avoid those crises in the first place by enacting 21st-century policies like wastewater recycling and reuse.
c) Wastewater recycling reduces pollution. Currently, the vast majority of wastewater is directed straight to open drains. Flowing through drains, this wastewater passes on into surface water bodies and groundwater, contaminating these twin sources of water, and in turn, spreading diseases through the population - particularly women, children, and senior citizens. Moreover, sometimes the water doesn't flow through open drains, instead of sitting stagnant and providing disease-spreading mosquitoes ample breeding grounds. Instituting a wastewater recycling policy would meet this problem at its source- treating water and reducing the amount of polluted water in open drains.

6- Objectives of the policy:

6.1 This policy is intended to direct the water sector towards more efficient use of water resources. It details the intention to reuse treated wastewater in irrigation that enables freeing fresh water to be utilized for municipal uses. It also provides for using the treated wastewater in other economic activities. It calls for expanding collection and treatment of wastewater, updating, and development of standards and practices for substituting fresh water used in irrigation and industry by treated wastewater after blending it.

6.2 The policy aims to increase surface water utilization for municipal uses and thus decreasing the strain on ground water

6.3 The policy can be better implemented through centralized wastewater collection and treatment systems to obtain the following objects:

(1) To ensure 100 percent sanitized cities
(2) To improve water supply service to causing on customer satisfaction, coverage, frequency and reliability
(3) Supply of potable water increase a large amount of money but is used for non-drinking purposes.
(4) Pure water is available is scarce quantity and shortage becomes acute during summer to overcome the shortage of water, for different purpose, use of potable water should mostly be for drinking purposes and reuse of water up to a certain quality after proper treatment of water for non-drinking purpose and last but not least scientific disposal of the remaining water in the object behind formulating in Point 4. Therefore, reuse of treated sewerage can provide incremental supply for portable application and thus reduce the need for augmenting supplies, water reuse promotes environmental sustainability by reducing the burden on already stressed basin and environmental preventing their depletion.

(5) Sewerage is disposed of unscientifically which heads to health hazards and pollutes groundwater as well. Therefore, water reuse in a lower volume of sewage discharge leading to a reduction in environmental costs and health hazard.

(6) Water reuse resource conservation and preservations of the sensitive ecosystem and reducing polluted loading.

(7) All cities and towns become totally sanitized health and livable and to ensure sustain good public health.

(8) Managing the scarce water efficiently, maximizing the benefits and returns, and proposing actions required for implementation

(9) Protecting the public health, environment, and nature

(10) Enhancing economic efficiency

(11) Ensuring sustainability and preserve freshwater

7- The Pillars of this Policy:

These are six major pillars in policy which are as under-

1- Water needs and competition between economic centers
2- Public health and Environmental considerations
3- Availability of infrastructure
4- Public acceptance
5- Suitability and adequacy of high-quality water
6- Sustainability and enforcement of regulations, and adequate collaboration with research and development departments.

8 Policy Statements

8.1 On Substitution Priorities

a) The government of Uttar Pradesh and the urban local bodies (municipalities) will work on increasing amounts of treated wastewater, through developing existing and new facilities.

b) Priority for substitution shall be given to industry or irrigated and irrigable lands with high productivity potential.

c) Reclaimed water shall be used for industry and agriculture as much as possible in order to save the fresh water for domestic uses.

d) Lands adjacent or close to the substitute water shall have priority in exchange for fresh underground water.

e) Priority utilization and use shall be applied to impounded waters shall be treated for its intended use.

8.2 On Institutional and Administrative Arrangements

8.2.1 A mechanism to price (tariff setting) treated wastewater, as well as blended treated wastewater will be developed taking into consideration fairness, cost recovery and economic activities support, Consideration shall be given to suitability, quality, and percentage of fresh water, location and reducing freshwater usage. This will reduce groundwater over-abstracting. A robust mechanism to adjust the prices shall be explored and agreed upon.

8.2.2 Technical, financial, economic and legal capacities shall be rebuilt under strong administrative body responsible for water substitution plans implementation Responsibilities shall focus on change management and capacity building of Urban Local Bodies and other concerned.

8.2.3 The Urban Development Ministry with the cooperation with Ministry of Agriculture, Irrigation, forest and other related departments shall be assisted to concerned the right types of products and adopt the best irrigation and marketing practices.

8.2.4 The Water Users Associations (WUA)/ Non-Government Organizations (NGOs) shall have a role in implementing this policy. The State Govt. and Urban Local Bodies (ULBs) will work with the District Urban Development Agency DUA/NGOs by Capacity building toward better implementation.

8.2.5 Monitoring programs shall be crafted and implemented. The reuse of sewerage effluent in wide use across and gaining an acceptance by State Government, Urban local bodies (ULBs) farmers, other stakeholders and communities, and cannot be disputed. Nevertheless, there are areas within the regulatory processes that need to consider a uniform approach to acceptable guidelines, such as the requirements for disinfection and monitoring of indicators (quality and characteristics) at particular times and intervals.

8.2.6 The state government Urban local bodies (ULBs) or any particular department will adopt and implement a State Level and ULB-Level Plan for Operation and Maintenance of wastewater treatment plants aiming at achieving efficiency. The plan will include best available models based on integrated wastewater and septage management principles including private sector participation and Public Private Partnership (PPP).

8.2.7 Private sector participation in reuse will be introduced; community-based initiative organizations (CBO's) and Non-governmental organizations (NGO's) will also be part of the process.

8.3 On Resource Management

1) Rainwater harvesting in identified critical areas shall be expanded to collect and impound rainwater that can be used as substitute water directly and indirectly through ground injection.
2) Wastewater collection and treatment shall be expanded in Urban and Rural part of the state and according to priorities; substitution requirements is part of irrigation and forestation schemes shall be rehabilitated and expanded.
3) Ground Water Users Associations (GWUA) will be established in identified critical areas, industries, Farmers, being the recipients and prime beneficiaries, shall participate in managing and monitoring the groundwater used, treated wastewater use and the possibility of blending.
4) Freshwater allocated to industries and irrigated agriculture and parks, playgrounds and open space shall be capped and eventually reduced according to medium and long-term plans to be prepared and implemented after which the reallocation plan can be updated accordingly.
5) A dynamic and sustainable economic development plan coupled with investment program shall be formulated and implemented for the use of surface waters and treated wastewater efficiently.

6) Information Education and Communication (IEC) would play the vital role in resource management and reuse of recycled wastewater in society.
7) The role of the Government shall be fine-tuned and its involvement reduced to be regulatory and supervisory. Involvement of the stakeholders in wastewater management and support shall be introduced and expanded.

8.4 On Resource Development

8.4.1 Wastewater is a perennial water source and shall form an integral part of renewable water resources and the Urban Local Bodies (ULBs) water budget. Each local body will consider it as a resource and make the plan for reuse as per the local conditions with the help and support of experts of the concerned. All Urban local bodies will make city/town wastewater reuse plan (C/TWWRP) for a period of 20 years considering future development and city including adjoining rural area development in line with city Master Plan to avoid any conflicts in developing the city in the future.

8.4.2 Existing levels of wastewater services shall be maintained and upgraded where necessary to enhance public health and the environment and the separate plan is to be prepared by each Urban Local Body as per their requirement. Treatment of wastewater shall be targeted towards producing an effluent fit for reuse in irrigation or other proposes in accordance with World Health Organization (WHO) guidelines as a minimum. Reuse of treated wastewater for other purposes shall be subject to appropriate specifications. Coordination shall be maintained with the official of Urban Local Bodies/Development Authorities and State Urban Development Department to account for the treatment and disposal of their liquid wastes. Central treatment plants shall be built to serve urban areas common or adjoining rural area, and collection of wastewater can be made initially through trucking until collection systems are justified. Specifications and minimum standards as stipulated by CPHEEO shall be applicable in urban areas. Particular attention shall be paid to the protection of underlying aquifers.

8.5 On Legislation and Institutional Arrangements

8.5.1 Treated wastewater specifications and standards shall be amended to include and ensure a safe reuse and to produce high economic return products, in line with the substitution goals and development requirements in the cities of the state suffering from water scarcity at the state level.

8.5.2 The rules, bye-laws, regulation and the Act concerned shall be amended from time to time as per need and requirement of the hour for reuse of recycled wastewater.

8.5.3 The provision of reuse of wastewater should be mandatory at all levels in whole urban and adjoining rural area.

8.5.4 Strict regulatory measures to manage the use of reclaimed water for agriculture or other purposes shall be followed.

8.5.5 An integrated approach to water resources management, combined with locally appropriate and sustainable risk reduction measures, and be active involvement of stakeholders from different sectors shall be established.

8.5.6 The provisions may be added in law for the wasting or exploring the fresh water and recycled wastewater and their resources.

8.5.7 **Enacting Wastewater Regulations-** To institute recycling and reuse of wastewater regulations, the after a grace period, apply this regulation to existing construction as well wherever feasible.

8.5.8 **New Construction-** All new construction of residential, non- residential & industrial or commercial buildings over a certain water usage threshold should include provisions for to treat and re-use greywater. There are several treatment systems in the market: most treatment consists of a sedimentation tank, followed by a simple anaerobic multi-baffled series of chambers, and lastly followed by a gravel filter (or planted filter) based aerobic process, whereby water is increasingly treated as it moves through each section. Such treated water can be reused in certain proposes at the spot of the building.

8.5.9 The construction plans for all new facilities should include plans for wastewater recycled treatment and municipal engineers or inspectors must monitor construction to ensure that these systems are built, operated, and maintained, Municipal may choose to waive the requirement for buildings that can be easily connected to an existing functional sewerage system if that is an expensive option. The capacity building of concerned engineers, inspectors, supervisors etc may be enhanced or developed up to required certain level in a suitable institution.

8.5.10 In addition to infrastructure, development should include plans for the use of wastewater. These plans can include the installation of a dual plumbing system, by which recycled wastewater is used to flush toilets, the use of recycled wastewater for landscape irrigation car flushing, clothes washing, or groundwater recharging (Where applicable). If a development cannot find uses for all of its own recycled wastewater, it shall make arrangements with either the municipality or nearby agricultural/ industrial building constitution users to appropriately use the treated recycled wastewater.

8.5.11 These small treatment units constructed in of residential, non- residential & industrial or commercial buildings should be subject to monthly quarterly annual inspections (as possible) to ensure their proper operation. The treatment facilities cannot exist only for show and developments should be penalized if their wastewater treatment and recycling system remain out of commission for more than one month (an adequate time to repair/fix the system if needed). The inspection shall also include water quality testing to ensure the treated wastewater meets appropriate standards for non - potable treated water.

8.5.12 Legislation arrangements for the development and management of wastewater shall be periodically reviewed. Gaps shall be filled, and updating of the institutional arrangements with parallel legislation shall be made periodically to cope with varying circumstances and for this government shall notify an agency giving full power to take necessary action in this matter.

8.5.13 **On Resource Management: -** It is highly imperative that Urban Local Body shall develop and manage wastewater systems as well as the treatment and reuse of the effluent.

8.5.14 The basin management approach shall be adopted where possible. The use of treated wastewater from sewerage, households, commercial and from industrial application shall be given the highest priority and shall be pursued with care. Effluent quality standards shall be defined based on the best attainable treatment

technologies and calibrated to support or improve ambient receiving conditions and to meet public health standards for end users. Key factors will include the location of the discharge, its proximity to wells, the type of receiving water, and the nature and extent of end users. Industries shall be encouraged to recycle part of its wastewater and to treat the remainder to meet standards set for ultimate wastewater reuse or to meet the regulations set for its disposal through the collection systems and/or into the receiving environment. Wastewater from industries with significant pollution should be treated separately to standards allowing its reuse for purposes identified by the city or to allow its safe disposal or water recharging. Consideration shall be given to isolating treated wastewater from surface and ground waters used for drinking purposes, and to the blending of treated effluent with relatively fresher water for suitable reuse. Urban Local Bodies can engage suitable Experts/Professionals NITs/ Engineering colleges.

8.6 On Public Acceptance

8.6.1 Awareness and educational programs and campaigns shall be crafted and implemented. These shall target citizens, farmers, industries and grouping them via unions according to their areas so that the amount of groundwater pumping is reduced and benefits and economic return per cubic meter are optimized.

8.6.2 The Programs should take into consideration belief and perception of the public based on scientific and logical proofs.

8.7 On Public Awareness

8.7.1 The public shall be educated through various means about the risks associated with the exposure to untreated wastewater and the value of treated effluents for the different end uses.

8.7.2 Programs on public awareness shall be designed and conducted to promote the reuse of treated wastewater.

8.7.3 Public awareness campaigns shall also be waged to educate the public on the importance of domestic hygiene, wastewater collection, treatment, and disposal.

8.7.4 It is observed that the system is dependent on the appreciation of the beneficiaries to the advantages and importance of the system to them and thereby working together towards making it successful. The co-operation is vital for following areas:

1- Protecting the system from getting choked due to the entry of extraneous material in the sewer system. A vigilant public will help prevent this.

2- The sewerage system yields full benefits or disease protection when there is 100% connectivity.

3- It is important that the beneficiaries appreciate the benefits and pay for their upkeep. The systems require proper upkeep and the cost associated with maintenance and upkeep should at least be recovered from the beneficiaries. The principal of the polluter pays will be adopted only by an enlightened and participating public.

8.7.5 A conscious campaign has to precede the planning and implementation of the sewerage Systems. ULB and Non-Government Organizations (NGO) and Local Neighborhood Committees (LNC) could give the process a thrust.

8.7.6 A public participation process will not only aid in identifying potential consumers but also serve as a public education program. Potential users will be mainly concerned with the quality of reclaimed water and reliability of its delivery and the constraints in using reclaimed water. Also, connection costs or additional sewerage treatment cost might affect their ability to use the product. Consultations with various stakeholders will aid in the structuring of tariff and discounts for adopting reuse technologies, awareness on the dual piping system, water conservation, and safety issues.

8.7.7 Urban Local Bodies (ULBs) should decide and pass resolution regarding sewer connection charges and should be widely publicized

8.7.8 Series of 'Sewer connection camps' may be organized. The time and venue should be publicized widely to inform residents. The days, time and venue should be to suit the convenience of the public.

8.7.9 Ensure that all non-residential building, Government offices, schools and community toilets, bathrooms are connected.

9 On Technology, Research, and Development

9.1 Modern and updated treatment technology shall be employed that produce reclaimed water directed towards maximizing saving and replacing freshwater for municipal consumption.

9.2 The Effluent quality standards shall be revised to suit various reuse purposes.

9.3 Domestic wastewater shall be treated and purified for full utilization for industrial, agricultural, cooling and other uses.

9.4 The related data and information will be tabulated organized for easy use and reference. It will be part of the information system that will facilitate research.

10- On Wastewater Collection and Treatment

10.1 **City Plan:** A proper and updated city plan is an essential pre-requisite for proper planning and design of all utilities and more so for the Sewerage Systems and water recycled from residential/non-residential buildings. The State shall endeavor to have proper digital city maps showing the levels prepared through modern available technology. The digital city maps should clearly show the city feature over ground and underground including all utilities. Geographical Information System (GIS), Ground Penetrating Radar (GPR), Total station etc. tools may be used for the preparation of city map. The city maps should be updated for every 5 years. An effective and comprehensive GIS-based database and Management Information System correctly mapping the assets, user base and status of operations shall be established.

10.2 **Design Period:** Every city has to prepare a City Wastewater Recycling and Reuse Plan (CWWRRP) for next 20 years along with the 5-year short-term plan. The CWWRRP for the city should take into account the likely changes in the city in next 20 years and plan for them and will be according to city Masterplan. The design of the sewers and planning of space should be for the 30-year projection requirements and for recycling from households and

commercial establishments. However, the units which can be developed in modules (e.g. Sewage Treatment Facility, Sewerage Pumping Machinery, onsite treatment facilities, etc.) can be designed for the appropriate shorter period. The earmark of land for Sewage Pumping Station (SPS) and Sewage Treatment Plant (STP) should be done for all Urban Local Bodies (ULBs) and appropriate land allotment shall be done by Development Authority/Urban Local Bodies/State Govt. on priority.

11 On Reuse of Treated Effluent and Sludge

11.1 Treated wastewater effluent is considered a water resource and is added to the water stock for reuse.

11.2 The blending of treated wastewater with fresh water shall be made to improve quality where possible.

11.3 Crop nutrient requirements shall be determined to take into consideration the prevailing effluent quality. Overuse of nutrients shall be avoided.

11.4 Accumulation of heavy metals and salinity shall be monitored, managed and mitigated. Leaching of soils shall be advocated by the irrigation authorities.

11.5 Treated effluent quality should be monitored and users alerted to any emergency causing deterioration of the quality so that they will not use such water unless corrective measures are taken.

11.6 Studies should be conducted and projects designed and implemented to store the excess treated wastewater in surface reservoirs but artificial recharge is not permitted. Due attention shall be given to the quality of treated and groundwater and the characteristics of the strata.

12.1- Wetland and river/stream flow augmentation

As with impoundments, water quality requirements for wetlands and river or stream augmentation will be based on the designated use of the watercourse and the aim to enhance an acceptable appearance. In addition, there should be an emphasis on creating a product that can promote native aquatic life. The quality of the reclaimed water discharged to the receiving water body is critical to evaluating its benefits to the stream. Water reclamation for stream augmentation applications requires consideration of a complex set of benefits and risks.

12.2- Constructed wetlands:

Constructed wetlands have been used successfully in the past for the treatment of wastewaters. Physical, chemical, and biological processes combine in wetlands to remove contaminants from wastewater. Greywater treatment is achieved by soil filtration in reed-bed systems which reduce the organic load of the greywater considerably, in addition to decreasing the concentrations of faecal bacteria. If properly designed, these systems would produce a clear and odourless effluent, which can be stored for several days without the need for disinfection.

13. Reuse of Recycled Water

13.1- Industrial reuse

Traditionally, pulp and paper facilities, textile and other facilities using reclaimed water for cooling tower purposes have been the primary industrial users of reclaimed water. However, the industrial use of treated wastewater has grown in a variety of industries ranging from electronics to process industries, food processing, as well as a broader adoption by the power-generation industry. Over the past few years, these industries have embraced the use of such water for purposes ranging from process water, boiler feed water, and cooling tower used to flushing toilets and site irrigation since industry can control water quality within their processes, specific standards for industrial use

13.2- High technology reuse

The use of reclaimed water in high-technology manufacturing, such as the semiconductor industry, is a relatively new practice. Within the semiconductor industry, there are two major processes that use water:

1) Microchip manufacturing, which has rarely utilized reclaimed water.
2) Circuit board manufacturing, which has rarely utilized reclaimed water.

While only circuit board manufacturing uses reclaimed water in the actual production process, both microchip and circuit board manufacturing facilities do use treated wastewater for cooling water and site irrigation. Reclaimed water for circuit board manufacturing requires very advanced treatment and is not discussed here.

13.3- Reuse by construction industry

The construction industry is the newest entrant to the industrial category and many urban utilities are now supplying treated wastewater for construction, the suggested standards for construction should follow the standards as provided in the Central Public Health and Environmental Engineering Organization (CPHEEO) Manual and established by the Bureau of Indian Standards'.

13.4- Ground Water Recharge

13.4.1- Groundwater recharge to aquifers not used for potable water has been practiced for many years but has often been viewed as a disposal method for treated wastewater effluent. In addition to providing a method of treated effluent disposal, groundwater recharge of treated wastewater can provide a number of other benefits, including the following:

1) Recovery of treated water for subsequent reuse or discharge.
2) Recharge of adjacent surface streams.
3) Seasonal storage treated water beneath the site with seasonal recovery for agriculture.

13.4.2- In many cases, groundwater can be recharged in a manner that also utilizes the soil or aquifer system where such water is applied as an additional treatment step to improve the quality. More ever as cautioned by the CPHEEO, 2013 Manual, such use should be considered after careful study of site conditions and requirements with strict monitoring measures.

13.4.3-Existing Construction

The Status of existing construction is clearly different, in many cases, there may be no room to construct basic greywater treatment infrastructure; if buildings are connected to an existing sewerage system, and then there is no need. However, it should not be assumed that all existing construction cannot implement wastewater construction. Existing developments should be given two years of time to come into compliance with the wastewater recycling regulations or seek a waiver based on the logistical impossibility of complying. Buildings already connected to functioning sewerage systems need not seek any waiver.

The state or municipal government may choose to utilize escalating penalties and fines over several years to bring all existing developments into compliance; they may also choose to use incentives, such as discounts on water charges or tax exemptions for the development of wastewater treatment and reuse systems.

13.4.4-GREYWATER TREATMENT OPTIONS

13.4.4.1 Greywater reuse methods can range from low cost methods such as the manual bucketing of grey water from the outlet of bathroom, to primary treatment methods that coarsely screen oils, greases and solids from the grey water before other uses, to more expensive secondary treatment systems that treat and disinfect the grey water to a high standard before using it further. The choice of system will depend on a number of factors including whether a new system is being installed or a disused wastewater system is being converted because the household is connected to the sewer.

13.4.4.2 **Components of Greywater Treatment Systems**

A Number of technologies have been applied for greywater treatment worldwide varying in both complexity and performance. The following in general greywater systems considered: -

a) Primary treatment (pre-treatment to secondary treatment)
    1) Screening
    2) Equalization
b) Secondary treatment -I (post-treatment of primary treatment)
    1) Gravel filtration
    2) Sand filtration
    3) Chlorination

13.4.4.3 Secondary treatment -II.

Broken brick, Charcoal, Chlorination, Treated greywater

13.4.4.4 **Household level Greywater Treatment and Reuse System**

In water-scarce areas, with specific treatment, the greywater can be cleaned and reused not only for gardening but for other use also.

Technological process Greywater treatment process at the household level mainly involves screening (grease and silt removal), soap froth removal, equalization, and filtration. Flow diagram of household-based greywater treatment system is shown below Advantages:

a) Reduces freshwater requirement
b) Prevents greywater stagnation
c) Prevents vector breeding
d) Use in flushing toilets to make toilets functional

e) Use of greywater in gardening
f) Minimal risk to users of greywater as it incorporates principles of water safety.

14- ON PRICING FINANCING AND INVESTMENT

14.1) In view of increasing marginal cost of wastewater collection and treatment, wastewater charges, connection fees, sewerage taxes and treatment fees shall be set to cover at least the operation and maintenance costs. It is also highly desirable that part of the capital cost of the services shall be recovered. The ultimate aim is for a full cost recovery.

14.2) Appropriate criteria in order to apply the "polluter pays" principle shall be established.

14.3) Different charges for different areas may be applied. This shall be assessed for each geographical area as a function of end users and effluent quality and will be subject to economic and social considerations.

14.4) Because of the limited financial resources available to Government of Uttar Pradesh, setting investment priorities in wastewater will be compatible with government investment plans.

14.5) Criteria for prioritizing investments in the wastewater sector shall take into account the current and future needs of the state need to expand wastewater systems in urban areas and to provide wastewater systems to smaller towns and villages.

14.6) Priorities of wastewater projects shall not be disconnected from water supply projects and urbanization in general. Decisions will be made concerning them to attain optimum solutions to the need for services, availability of finance and availability of trained manpower.

14.7) Treated effluent shall be priced and sold to end users at a price covering at least the operation and maintenance costs of delivery.

14.8) It is the intention of the Government, through private sector participation, to transfer management of infrastructure and services from the public to the private sector, in order to improve performance and upgrade the level of service.

14.9) The role of the private sector will expand with management contracts, concessions and other forms of private sector participation in wastewater management.

14.10) The concepts of Built Operate Own/Built Operate Transfer shall be entertained, and the impact of such concepts on the consumers shall be continually addressed and negative impacts mitigated.

14.11) The private sector role in the reuse of treated effluent shall be encouraged and expanded.

14.12) The costs will depend on the system/technology adopted for collection of sewerage and treatment and the administration costs. It is important that the full cost of the service is assessed for each urban area instead of adopting a typical cost assessment. The full cost shall cover the following:

1. Institutional aspect of the sanitation service e.g. the management information systems, accountancy and financial management, billing and collection, customer services, etc. and oversight activities.

2. Operating, maintaining (on a planned maintenance basis), repairing replacing and extending sanitation service physical infrastructure.
3. Keeping updated infrastructure and customer data on a GIS base.
4. Managers, staff, vehicles, equipment, and consumables associated with above.
5. Consumable like chemicals etc.
6. Power charges.
7. Spare Parts.
8. Any other O&M contract amount

14.13) The Urban Local Bodies are proposed to have following sources funds for O&M: -

1. The O&M cost will be met from the Government grants ULB's fund and contribution of the beneficiaries.
2. Revenue from the sale of treated wastewater.

The town policy should include the provision of the recovery of the full capital cost of laying sewerage system and prorated the cost of STP for new colonies. It shall be mandatory for the ULBs and other development agency to adhere to minimum 20% reuse and recycling of treated wastewater. The treated wastewater may be sold at a rate, as adopted through the transparent procedure as decided by State Government.

15 ON STANDARDS, REGULATIONS AND QUALITY ASSURANCE

15.1) Particular attention shall be focused on adopting and enforcing effluent and sludge standards for municipal and industrial wastewater treatment plants and for discharges from industries, laboratories, hospitals, slaughterhouses and other businesses.

15.2) Extensive and comprehensive monitoring programs shall be developed. Influent to and effluent from the plants and throughout watercourses shall be measured and monitored against all appropriate parameters to ensure that public health objectives and treatment efficiency goals are attained.

15.3) Observation wells shall be installed near the treatment plants to monitor groundwater quality where necessary, and to mitigate adverse impacts where and when needed.

15.4) Data collected from the monitoring process shall be entered and stored, processed and analyzed through computer software, and results published periodically.

15.5) Roof and stormwater connections to public sewers shall be prohibited. Collection of storm water shall be done separately and will be the subject of water harvesting.

15.6) Effluent and sludge standards for the disposal of hazardous liquid wastes shall be defined to ensure the safe disposal of such wastes.

15.7) State Pollution Control Board/ Central Pollution Control Board regulations for disposal norms shall be mandatory.

15.8) Industrial wastewater is not allowed to dispose of in the sewer line. ULB can issue notification for penalties to be imposed on such industrial units.

15.9) Laboratories shall be maintained and properly equipped to provide services and reliable data needed to ensure enforcement of and adherence to standards and regulations.

16- <u>On the Human Resources Development & On Research and Development:</u>

16.1- Capabilities of human resources in the management of wastewater shall be enhanced through training and continuous education. Work environment shall be improved and incentives provided.

16.2- Establishment of State Water & Wastewater Training Center at the state level. It will help in the training of human resources in this sector.

16.3- Human resources performance will be continually appraised in order to upgrade capabilities, sustain excellence and provide job security and incentives to qualified individuals with excellent performance.

16.4- Applied research on relevant wastewater management topics shall be adopted and promoted. Topics such as the transfer of wastewater treatment technologies, low-cost wastewater treatment technologies, reduction of energy consumption and others will receive adequate support.

16.5- Cooperation with specialized centers in the country and abroad shall be advanced, and raising of funds for this purpose shall be supported.

16.6- Transfer of appropriate technology suited for local conditions will be a primary target for the development activities and for adaptive research.

17- <u>On Selected Priority Issues</u>

17.1) To the extent that design capacities of wastewater treatment plants permit, the priority of collection and house connections shall be accorded to the expansion of urban areas served by treatment facilities. Users willing to contribute to the cost of the services in addition to fees and charges set by laws and regulations shall also be given priority.

17.2) Where design capacities of treatment facilities and of conveyance systems are approached or exceeded, priority shall be given to the expansion of such capacities.

17.3) Priority shall be accorded to situations and locations where waste-water disposal practices threaten the environmental integrity of freshwater resources, and where the performance of cesspools and percolation pits pollute underground water aquifers.

17.4) More awareness campaigns will help to spread the work. The civic body should make it mandatory for new constructions to have a separate system to collect grey water.

18.1- OPERATION AND MAINTENANCE (O&M)

There are several important factors that need to be considered when planning wastewater plants and options which will have a direct impact on O&M and monitoring. Since O&M aspects are important for the overall long-term success of the programmed, O&M planning, including the financial provision of funds, should be included in the terms of references for the design of each plant. Furthermore, the O&M plan should be reviewed and approved along with engineering designs and specifications, including the operation and maintenance cost:

1) location of the wastewater treatment plants and its proximity to residential areas;
2) volumes and schedules of wastewater collection;
3) the degree of mechanization of technologies; and
4) final endues or disposal of reuse
5) running it on PPP mechanism and charging the different users

18.2 Public Private Partnership (PPP)/Engineering Procure Construct (EPC) and Operational &Maintenance (O&M) Contract

As there is budget constraint from the state and ULB side the option of the Project through Public Private Partnership (PPP) will be explored. In case the PPP mechanism is not workable then the EPC mechanism will be explored and long-term O&M Contract will be done.

19- STATE-LEVEL IMPLEMENTATION STRATEGY

19.1) State Govt. will develop and issue wastewater Implementation Strategy and Plan Guidelines. These Guidelines will provide an overall state-level framework, objectives, timelines and implementation plans to the ULBs. The Implementation Strategy will cover aspects such as implementation targets, a framework for engagement of the private sector, training and capacity building, behavior change and social communication, M&E framework, specific roles and responsibilities of various entities, guidelines to develop ULB-level plans, and funding mechanisms.

19.2) ULB-specific wastewater Strategy and Action Plan conforming to the State Policy will be developed by each ULB based on the State Faecal Sludge & Septage Management Implementation Strategy and Plan Guidelines.

19.3) The policy will be implemented in all ULBs in three phases subject to the progress of achievement and decided by State Government.

i. In the financial year 2017-18, it will be implemented in all the Municipal Corporation.
ii. In the financial year 2018-19, it will be implemented in all municipal Councils/ Nagar Palika Parishad.
iii. In the financial year 2019-20, it will be implemented in all the Nagar Panchayat.

All efforts will be done to follow the execution method outlined above for the cities towns, however, depending upon the center/state programme and budget availability the cities/towns might be chosen from any category in any financial year. Due to environmental factors the cities/towns may also be chosen out of these to implement the plan.

20- MONITORING & EVALUATION

20.1) At the state level, the Directorate of Urban Local Bodies, UP and ULB at ULB level will adopt San-Benchmark framework for revised service level benchmark for sanitation that assesses the performance of city wise wastewater recycling and sewage water treatment.

20.2) State Director of Urban Local Bodies, UP will develop an M&E framework to measure cities' performance, and also devise data collection and reporting

systems using indicator framework developed for San-Benchmark. This will be aligned with the 14th Finance Commission condition of publishing the service

level benchmark to avail performance grant. ULBs will develop robust reporting format to track compliance of the various stakeholders with outcomes and process standards.

20.3) A cell will be created inside the Directorate of Urban Local Bodies, UP to monitor and evaluate the wastewater recycling and reuse management operation. The cell will be created by funds from external agency funding or from the funds of Central/State finance commission or through the state budget as decided by State Govt.

20.4) A Management Information System (MIS) will be developed accordingly to monitor and evaluate the progress.

21- INCENTIVE- Incentive may be given as a rebate to stake holder's households in form of tax and other charges as decided by ULBs and State Government on the following conditions:

21.1) All the Individual Households of Resident Welfare Associations (RWAs) will treat their wastewater in a decentralized manner and reuse it inside their colonies as permissible will get a rebate of 10% or more as decided by ULBs State Govt. in the property tax.

21.2) All the new apartments which will be constructed and compulsory treat and reuse the treated wastewater in their apartment, will get a rebate of 10% or as per resolution of ULBs/authority competent to sanction building plans in the construction permit fee or other charges.

21.3) All the new malls, big hotels, industries, clubs, colleges, universities, hospitals, sports stadiums etc. which will be constructed will compulsory treat and reuse the treated water. In doing so they will get a rebate of 10 % or decided by State Govt. of the construction permit fee.

21.4) A separate head of the tax namely called ‘Wastewater Recycle & Reuse Tax’ will be created which may be levied in the property tax for the operation and maintenance of the septage by means of the amendment in State legislation.

22- Demand Profiling

The state and municipalities shall also endeavor to enable the reuse of treated wastewater. There may be cases where an institution produces more wastewater than it can use. The municipality shall ensure that this wastewater can be used either by the

municipality itself (for municipal purposes use) or for agricultural, industrial, or groundwater recharge purposes.

A key component of this process is "demand profiling." Demand profiling at the ULB level shall help in identifying the different local reuse contexts that exist in the ULB. Based on this, it will be possible to identify the major and minor demand drivers. The major demand drivers will mostly determine the quality parameters that the treated wastewater needs to conform. The design of the treatment systems will be influenced by these quality parameters. Such a pro-active approach shall help avoid situations where reuse becomes infeasible because the correct treatment technologies were not chosen resulting in loss of precious water. In cases where the treatment systems are yet to be set up, it will definitely help to locate the treatment systems close to the sources of demand. This will bring down the costs of conveyance, making reuse viable.

As far as local reuse is concerned, the generation and consumption almost always occur within the same boundaries/premises. As a result, the treatment is always done closer to the source of the demand. Thus, the focus is more on being able to identify the right treatment option to be able to generate treated wastewater of the desired quality.

23- Policy evaluation:

23.1) The policy may be reviewed as and when required for assessing its effectiveness and making changes if necessary.

23.2) This policy shall come into force from the date of Executive issue of Govt. order or notification in the official gazette of State.

24- Power of the State Government

24.1) Notwithstanding anything contained in the foregoing paragraphs of the Uttar Pradesh wastewater Policy, 2017 the State Government by the issuance of notification in the official gazette may amend or withdraw or notify any of the provisions and/or the schemes mentioned hereinabove.

24.2) Interpretation - Should any doubt arise as to the interpretation of any of the provisions of this Policy, the matter shall be referred to the State Govt., whose decision thereon shall be final and not challengeable in the court of law.

24.3) The direction issues by State Govt. to ULBs, other related water supply, and sewerage service provider and developers in urban areas of State for the implementation of the policy, shall be binding upon them.

24.4) State Govt. may make and regulation for the implementation of the policy.