

Hindon River

Rejuvenation Plan



भारतीय नदी परिषद



INTRODUCTION

Rivers are acknowledged as the destinations of human civilization. In India per capita availability of clean and fresh water up to 1950 had been 3110 cmt per year and this was quite satisfactory as per international standards. The situation was quite comfortable and there was no need to worry. However, the scenario changed quite fast due to disproportionate emphasis on developmental activities after independence. The centralized and top-down approach to resource development could not take proper care of the health of Rivers. Development should have been essentially participatory and bottom-up which need to take cognizance of the regional variations and ground realities. According to a study the per capita availability of water in India has fallen to 1463 cmt by 2014. This shows a relative reduction in the availability of water and at the same time fast growth in population leading to a critical crisis in India today. On the other hand requirement of water for industries, Urban Population and Agriculture has also rapidly increased.

Water is needed for domestic purposes agricultural, industrial and energy production and therefore essential for thriving of people. Pattern of consumption of water in India is 90% in agriculture, 6% domestic and 4% for industry use and this pattern generates waste water polluted due to industrial waste.

Quality of water is deteriorating and its quantity cannot be increased whereas requirement is growing very fast. By 2050 we will need just about double quantity of water what we are consuming today per capita. Post-independence period witnessed quite a fast industrialization which is directly proportionate to the rate of contamination of fresh water. The urban population in India was about 387 million in 2011 and increased to about 420 million by 2017. This has thrown up too self-perpetuating problems namely shortage of water and sewage overload. It is estimated that by 2050, more than 50% of the country's population estimated as 1000 million, will live in cities and towns and thus the likely demand for infrastructure facility including fresh water for drinking and resultant waste water discharges are expected to rise sharply posing a challenge to urban planner, policy makers, environmental regulators and managers

Once a life line now a dead river Hindon (355 km.), originating from Pur Ka Tanda village in Upper Shivaliks, carries a 96000* kilo

litre waste dumped in to it directly and in addition 85000* kilo litre is being dumped in its tributaries, Krishna (153 Km), west Kali (145 Km.), Paondhoi (7 km.) and Dhamola (52 km.) every day. It is estimated that a total about 1215.43 MLD sewages drains into Hindon. Central Pollution Control Board has declared in 2015 that the water of Hindon is unfit for bathing. The river and its tributaries started dying since 1980 with the establishment of about 316 various types of industries including paper, sugar, distilleries, chemicals and slaughter houses along their banks. These industries draw large quantity of water from the rivers and discharge

Untreated polluted waste water back into them. It is reported that out of about 872 villages situated along the banks of these rivers 106 villages are facing serious health problems due to the contaminated drinking water sources. Hindon meets Yamuna at village Momnathal of Gautambudh Nagar.

1.1.1 ORIGIN OF HINDON

Until the ground verification by a team headed by Dr. Prabhat Kumar IAS, Chairman Nirmal Hindon Initiative and Commissioner Meerut Division, it was believed that Hindon River originates from the forests of Pur ka Tanda village of Saharanpur District. But now it has been established and confirmed by physical verification and reliable records that the river Hindon starts from Kaluwala Khol, a place much higher than Pur ka Tanda. According to British Gazetteer, Topo Sheets (old 4 inch to a Mile Contour Map) and



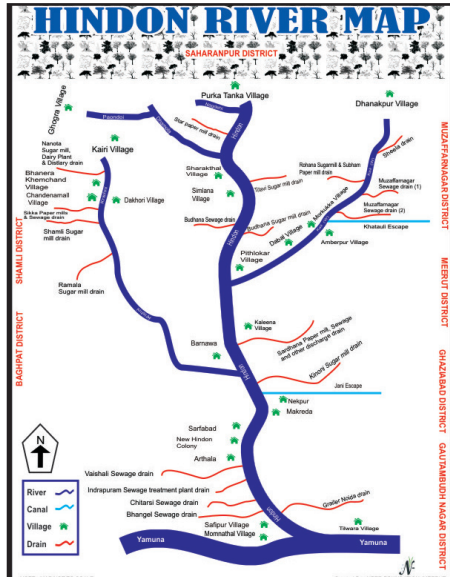
Satellite mapping it is further verified that the Hindon runs as a small nallaha with local name Barsani from Kaluwala Khol situated in Shivalik mountain ranges of Muzaffarabad block of

Saharanpur district. Before it's reaching at Pur

ka Tanda a number of streams, namely, Strot, Chajjewali, Peerwali, Sapoliya, Khothri and Andhakundi flow into Barsani. Further, it flows through Saharanpur, Muzaffarnagar, Meerut, Baghpat and Ghaziabad districts, stretching about 355 kms before finally meeting the Yamuna River near Momnathal and Tilwada villages in Gautambudh nagar district of Uttar Pradesh.

1.1.2 TRIBUTARIES OF HINDON

Apart from a large number of nallahs and streams, right from the foot hills of the Himalayas up to its terminal point, there are three major and five minor tributaries of the river Hindon. Kali (west), Krishni and Dhamola are the three majors and PurkaTanda, Paanvdhoi, Sheela, Naagdev and Chacharaav are the five minor ones. Amongst other supporting main streams Barsani, Sapolia, Chajjewali, Peerwali, Khothri, Andhakundi and Stroti can be counted. These all together give life to Hindon by flowing into it at different locations.



Naagdev River also originates from Shivalik Mountains at west side of Hindon River. It flows for about 45 kms before merging with Hindon in forests of Ghorki village of Saharanpur district. It flows heavily in Rainy season and acts as main source of waters in Hindon.

Another main tributary Kali (west) River originates from eastern side of Hindon at Gangali village of Saharanpur district and flows for nearly 145 kms before merging with Hindon near Pithlokar village of Muzaffarnagar district. A stream Sheela, as a small tributary to tributary starts from Chudiyala and has joined already with Kali west in Matoli village near Deoband.

Krishni flows in east of Hindon from Darari village of Saharanpur district and passes through Shamli and Baghpat districts before meeting with Hindon at Barnawa village of Baghpat district. It has its own spread

of about 153 kms. And carries heavy amount of pollutants in form Of non-treated wastes of industries of Nanota, Sikka, Thanabhawan, Charthawal, Shamli and Banghpat along with household waste which finally goes into Hindon.

Dhamola River, originating from Sansarpur village of Saharanpur district in west of Hindon and flows for about 25 kms before merging with Hindon at historical Sharkathal village in Saharanpur district itself. This village is “Majra” of the historical village Sadoli Hariya. Dhamola’s tributary stream Paavdhoi starts from Shanklapuri village of Saharanpur district where a historical Shiva temple exists. Two seasonal drains namely Khurd and Gunkat originating from Meherbaani village also flow into Paavdhoi stream. Flowing forward for nearly 7 kms from Shanklapuri village, Paavdhoi enters in to Dhamola near Saharanpur city. Paavdhoi starts with clean waters, blessed with “choya” (water oozing upwards due to ground water level) but during its journey up to Dhamola, hardly few kilometers, gets heavily polluted by non-treated wastes of Saharanpur city. Dhamola flows into Hindon with whole sewage waters of Saharanpur city and loaded further with Pavdhoi’s polluted waters.

Hindon & Its Tributaries

SN	River Name	Origination	Meet Point	Merge in	Length
1.	Hindon	Hindon River Shivalik Mountain Range (Village Kaluwala Rai, Dist Saharanpur, U.P.)	Village Tilwada/ Momthal, Dist. Gautambudh Nagar, U.P.	Yamuna River	355
2.	Krishni River	Darari village, Saharanpur district, U.P.	Village Barnawa, Dist. Baghpat, U.P.	Hindon River	153
3.	Kali River (West)	Village Gangali, Dist. Saharanpur, U.P.	Village Atali/ Pithlokar, Dist. Muzaffarnagar/ Meerut, U.P.	Hindon River	145
4.	Sheela River	Village Bhagwanpur, Dist. Haridwar, U.K.	Village Matauli, Dist. Saharanpur, U.P.	Kali west River	61
5.	Dhamola River	Village Sansarpur, Dist. Saharanpur, U.P.	Village Sharakthal/ Sadoli Hariya, Dist. Saharanpur, U.P.	Hindon River	52

6.	Pavdhoi River	Village Shanklapuri, dist Saharanpur, U.P.	Saharanpur City, Dist. Saharanpur, U.P.	Dhamola River	7
7.	Naagdev River	Village Khothri, Dist. Saharanpur, U.P.	Village Ghorki, Dist. Saharanpur, U.P.	Hindon River	45
8.	Chacha Rau	Village Kaluwala, Dist. Saharanpur, U.P.	Village Kamaalpur, Dist. Saharanpur, U.P.	Hindon River	18

1.1.3 SOURCE OF WATER

The water, collected from the area situated in and around the villages, Kaluwala Khol and Pur ka Tanda including others falling in the catchment of the upper streams joining the Barsani and Hindon subsequently down below, forms a live stream. Irrigation department has also constructed two small Check-Dams in the forests here to collect water. This stream flows into Hindon River, which carries pure and clear waters from Shivalik mountain ranges of Kamaalpur forests. About 90 % of the stream water flows in Hindon itself and rest contributes to stream from Purkatanda.

Hindon is a rainy river as it receives high amount of waters in monsoon season (July to September) and flows flooded, however, during rest of 8-9 months it is almost a polluted drain choked with solid waste, sewage and other pollutants. Even near the source of its origin it swells up for a short time about 100 m wide and a meter deep during rains. Some of the water is contributed by runoffs and then seepage of the water absorbed by roots of trees in well wooded or dense forest of the catchment. In whole length of Hindon, 3000 cusec of water is added from upper Ganga canal and sub canals at four different locations. About 100 ft fall known as Barsani fall is able to add water to Hindon all the year round. In year 1978, Hindon made a record of highest water flow of 1, 30,000 cusec.

After crossing and newly formed Dist Bagpat, Meerut being in the east and Baghpat in the west. From west, the river Krishni, flowing for about 10 Km in the new District Shamli, joins Hindon at village Barnava, believed to be the seat of the LAKSHAGRAH constructed by Kouravs (Duryodhan) during Maha Bharat Kaal. But before Barnava, a filthy drain from Sardhana town has also entered in to Hindon near Kalina village.

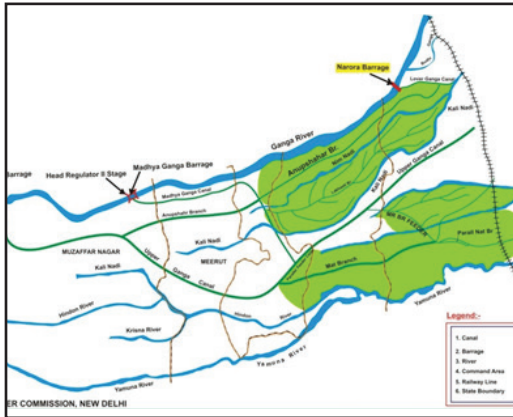
Before meeting Hindon, Kali (west) receives, on an average, about 1000 cusec of water from a minor canal of upper Ganga sub canal at Ambarpur, 25 KMs before Muzaffarnagar city. Kali west is one of the

most polluted rivers of India as it carries huge quantity of pollutants. About, 100 cusec of water is being added to Kali west from Bhanera escape of Devband Branch in Saharanpur district, again from upper Ganga Canal.



As Hindon moves forward, about 1500 cusec water is added to Hindon from Upper Ganga Canal near Jani

village. Jani minor can spare about 2000 cusec water for the Hindon, near Mohammad Dhoomi Village, situated at 2 KM short of Meerut –



Bagpat road. Due to the fast current of clean water so added, the flow of the Hindon is also improved and the viscosity of the pollutants is reduced to some extent. The water added here is used for a minor canal extracted from the River Hindon at Ghaziabad/Mohan nagar for supply of water to Agra

city. Unfortunately, the Hindon is polluted due to effluents from a number of irresponsible industries and solid wastes of the towns along its banks near Ghaziabad. Challenges are further increased for Hindon in Ghaziabad as it receives heavy amount of pollution in form of city sewage, solid wastage and liquid waste discharge of industries, throwing the river in most critical condition where it also faces encroachment of its basin too.

A barrage constructed at Hindon near Mohan Nagar in Ghaziabad stores about 70 % of water of the River which is further diverted in to Hindon Canal headed to Agra. At a point just about 2 KM short of the place where Hindon meets Yamuna, nearly 400 cusec water is again added and the balance 30% water is allowed to pass into the River.

1.1.4 CATCHMENT AND BASIN OF HINDON

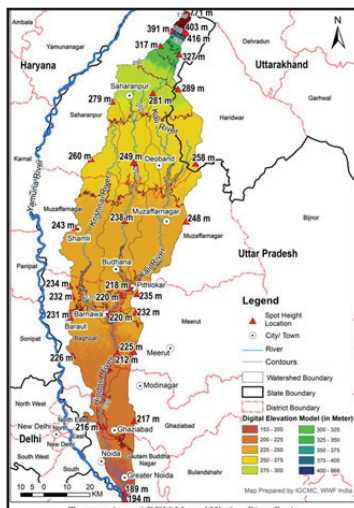
Hindon River starts from Shivalik mountain range near Kaluwala.

It is a monsoon river. A number of smaller streams flow into it. Dividing Uttar Pradesh and Uttarakhand as border line for the two states it covers maximum area of Saharanpur district, the western part of Shivalik mountain ranges near Kaluwala and Kothrimilaan where it is known as Barsani River.

The Shivalik reserved forest area, including forest ranges of Mohand, Shahjahanpur and Shakumbhri constitute a major and important catchment of Hindon. The distance between Shivalik ranges facing towards Uttar Pradesh and border of forest reserve is around 15

KMs. In this whole stretch of 15 KMs, Hindon is surrounded by dense sal forests and mountains on both sides. Most of the rain water flows into Hindon stream down as runoff from the mountains and thereafter as seepage from the forested area. The river receives huge amount of water in monsoons and flows downstream. The local residents of the

Upper reaches of its catchment and Vangujjar community call it with different names like, Barsani, Kaluwala Khol and Guleria, for different lengths of the stream. There are about 865 villages situated within the basin of the Hindon and its tributaries. A map showing the basin of the Hindon River is annexed as for ready reference.



1.2 PAST BRIEF HISTORY

1.2.1 ABOUT HINDON

It is said that the name Hindon is derived from Harnandi. Nobody is sure about it; however, there are folk lore and old stories prevalent in the vicinity that very much mention about a pure water body. Harnandi and Hindon sounds quite similar and it is just possible the word Harnandi changed to Hindon in due course of time.

The times, that they are a changing, however, it is not far away when water in Hindon was as pure as as fit for drinking. It used to be very transparent and massive all weather flow. The author himself

remembers a wide spread of glossy white thick sand, in Village Banat, along the bank of Krishna River a Tributary of the Hindon. Young boys used to wallow and play a number of games, including drawing warmth from the sand exposed to sun, while jumping in to most attractive quality and quantity of water ahead in the river. The water used to be as transparent and pure that in good sunny hours a game of throwing and then searching a coin out of the flowing river was very common. Without hesitation people used to drink water from these rivers with no apprehension. This continued until establishment of industries along the Hindon and its tributaries with installation of inadequate or nonoperational Effluent Treatment Plants or no ETP at all. Maximum of the industries were established during the period from 1980 onwards.

One more important aspect of recent history cannot be ignored. We are aware of the fact that as late as 1960 there used to be a web of canals ,sub canals ,major and minor canals channels gools and flood-irrigated farm land in the basin area of the Hindon and tributaries. That means water was being absorbed by the upper surface of the soil of the area and it was available for seepage in to the river all the time. But after 1960 it started shrinking and within short piece of time it was all stopped forever. Now the state of affair is as bad as it could have never been imagined. We also know that one single and simple looking intervention and artefact can change the shape and fate of the whole ecosystem that we could never be able to anticipate. We should not forget that in case of ecosystem the sum of its pieces (ingredients) is always much less than the actual value of the ecosystem. In nature 2 plus 2 is not always equal to four. Stopping irrigation and allowing its shortage to be compensated from the quantity of water drawn from underground was not that simple. It has a multiple bad effect on the life of the people here. All the rivers got dried and ground water level has been drastically going down every year due to one of the reason of disbanding the irrigation facility in this area. The aquatic fauna and flora of and around the Hindon and tributaries has almost vanished and the surroundings are in bad shape.

1.2.2 REJUVENATION HISTORY

The past attempts to make Hindon Nirmal dates back as early as 2007 Paodhoi Bachao Samiti movement starts its interventions regarding cleaning of paodhoi river.

The Government of Uttar Pradesh entered to support rejuvenation program of Hindon River than NEER Foundation also join hands for awareness and to develop road map for cleaning Hindon. Recently a number of initiatives to mitigate pollution and to augment flows in the

Hindon River have been started including closer of 40 major polluting industries, construction of rubber dams, check dams and recharge ponds in the upper reaches. On the initiation of Government of Uttar Pradesh the Hindon Basin Committee was constituted under the chairmanship of Divisional Commissioner, Meerut for the purpose of implementation of proposals of the project.

1.3 PRESENT STATUS

The situation is critical due to enormous volume of different pollutants and in the water and other suspended particulate matter (SPM). These pollutants pose an imminent health threat for human life and endanger the biodiversity of the region. The Hindon is one of the most polluted River due to municipal, agricultural and industrial waste which is being released into its water



without proper treatment. Once a sacred River has turned into a dirty drain with an overflow of industrial effluent, Sewage and garbage. As



has been mention in the foregoing paragraph 96,000 Kilolitre waste is being dumped into Hindon in addition to 85,000 Kilolitre into its tributaries Krishna, West Kali, Paodhoi and Dhamola per day. It is also estimated that a total about 1215.43 MLD sewages is drained into Hindon.

A number of plants and aquatic animals are either extinct or under threat. Due to bad quality of water the hole eco-system is badly affected and aquatic flora and fauna is almost absent in the water of Hindon and polluted tributaries. The ground water is also

badly affected due to harm full chemicals and the pollutants resulting into unhealthy water. Some of the villages situated along



the affected part of the river and its tributaries are unfortunate because they are adversely affected due to contaminated water. These villages are facing deadly diseases that have cropped in due to consumption of contaminated water. About 116 number of villages are compelled to use the contaminated water which is not fit for drinking. Hindon

Keeps on receiving sewage and Industrial wastage throughout its journey and the same is the situation in case of its tributaries. A huge quantity of sewage and non-treated harmful industrial waste await more challenges for Hindon where it is almost killed and choked due to above stated garbage. The booster doses of clean water from Upper Ganga Canal too could not help Hindon much. Source of pollution are broadly categorized as point sources and non-point sources. Point sources impacting the water resources in a significant manner whereas non-point

Sources are categorized contributing only during the monsoon season.

1.3.1 POLLUTION AND INDUSTRIES



There are 401 Industries in the basin of Hindon including those which have been closed by the Owners themselves. 316 Industries are operational; a list of these Industries River wise and category wise is shown in the table below. Distillery, Paper Pulp, Sugar, Tannery, Textile and others are main categories for which specific treatment has been Proposed. Main source of pollution other than industries is agriculture runoff and garbage of cities. Heavy industries is a category in which there is heavy rate of pollution. In this category paper mills, sugar mills and thermal power plant are included. Star Paper Mill in Saharanpur District is a major pollutant. River let Naagdev carries wastes from small industries which ultimately is added to Hindon at Naugaja peer, all the industries have been indentified and proper treatment in situ has

been proposed in the chapter two. The river gradually gets alarmingly polluted to a stage where no organism can be alive.

There are seven more industries (5 paper pulp & 2 Sugarcane mills) that are located near Sheela River's bank which flows in Haridwar district, and merges with Kali West River. Therefore the industrial effluent of these 7 industries goes to Hindon ultimately. Thus the number of industries responsible for pollution becomes 323. Hindon River out of each about 450 MLD is filtered in 4 cities but balance 765.43 MLD is unfiltered and unattended flows to Hindon due to unavailability of sewage treatment system.

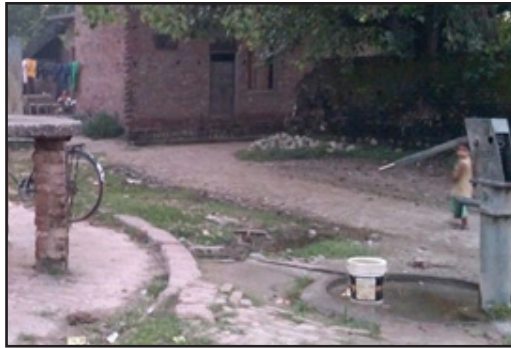
The status of Industries River wise is shown in the table below:

Sl No.	Sector/Category	Hindon River	Kali (West)	Krishni	No. of Total Industries
1.	Sugar	5	5	4	14
2.	Distillery	4	2	2	8
3.	Pulp and Paper	9	30	2	41
4.	Straw Board	16	0	0	16
5.	Slaughter House	5	1	0	6
6.	Frozen Meat Packaging	5	0	0	5
7.	Dairy	3	0	1	4
8.	Tannery	5	1	0	6
9.	Textile	105	0	0	105
10.	Thermal Power Point	1	0	0	1
11.	Electroplating/ Phosphating Galvanizing	39	0	0	39
12.	Others/Misc	68	3	0	71
	Total	265	42	9	316

There are many sources of the pollution discharged into the Hindon River and its tributaries Kali (west) and Krishni which forms entirely rain fed water resources system. The river system is receiving industrial and municipal untreated waste water which is being discharged directly or via drains into the river. As per CPCB assessment (2013), the (surface) water quality of Hindon is not meeting the criteria with reference to dissolved oxygen, conductivity, BOD total coli form and fecal coli form.

The problems do not end with the surface water degradation. In part of the basin the ground water quality is not fit for drinking purpose as per specification proceeded by Bureau of Indian standards(BIS-2012). Throughout the catchment and at levels that exceed standards for

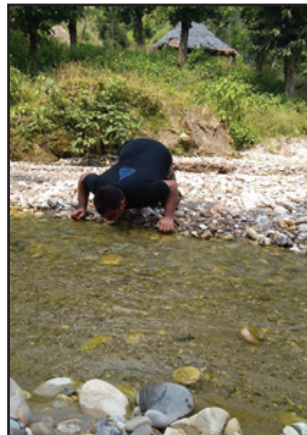
safe bathing and drinking water a large number of toxic organochlorine pesticides and heavy metals have been identified in the ground and surface water. It also has been noticed that excessive use of fertilizers and pesticides for crops



grown in the basin is responsible. River Kali unloads about 60% of total metallic load into river Hindon near Ghaziabad. Across the basin of Hindon nitrate has increase in the subsoil due to excessive use of pesticides and fertilizers. Everywhere we find that the release of untreated water from the pulp and paper industries carrying chemical sodium hydroxide and sodium supplied mixed with bagasse and wheat straw as residue. Assessment of water quality have provided base line information in respect of water bodies covered under the network locations. Water quality in rivers is deteriorating due to depleting water flow aggravated by discharge of pollutants from domestic sewage, industrial effluent and run off from agriculture. Most of the surface water bodies in the country are contaminated to some extent due to organic pollutants and bacteriological contamination.

1.3.2 EFFECT OF POLLUTION

The underground water of the villages situated near the banks of the polluted Rivers and Nalas is highly contaminated and not potable. Because of this contaminated and sometimes poisonous water the consumers of the water are suffering from deadly diseases. Due to unavailability of water for irrigation many of the farmers do use this contaminated water for irrigation. The crops so grown are defiantly not fit for human consumption. However, people ignorant about these factors consume this as food and face number of serious health problems. This practice of using untreated water spoils soils, harvest and



human health as well. A number of hand pumps along the Hindon and its Tributaries have been forcible taken out under instruction of the National Green Tribunal (NGT), so that people did not use water of the hand pumps. This situation has force many people to leave the affected areas as migrant to live in another village.

1.4 VISION

Addressing subjects like water flows, solid waste management, industrial effluent, pollution loads and urban sewage treatment. A vision is developed for Hindon to achieve a naturally balanced eco-system, consisting of both ground and surface water that can support flora and fauna in the basin. This contention is incorrect that the river Hindon and its tributaries were non perennial. About 50 years back all these rivers had sufficient water in their bed flowing. All the three rivers



Use to have water even in the month of acute summer. However, the flow died slowly. We aim at a situation of arrival and Nirmal Hindon, which means comparatively pure water Flowing throughout the year. The goal is to secure sufficient and safe water to support sustainable economic and social growth in the Hindon basic and safe guard current and future water needs of all water users that includes domestic, ecological, agriculture and industrial and eco-system by 2025.

It aims at reducing industrial, urban and agricultural pollution loads into the river and increase ground water levels. A naturally balanced ecosystem consisting of both ground and surface water, which supports life of fauna, flora, and people in the region is our vision.

1.5 OBJECTIVES

The work plan aims to achieve following objectives namely:

- 1.5.1 RESTORATION OF NIRMAL WATER FLOW**
- 1.5.2 CLEAN ENVIRONMENT**
- 1.5.3 WELL BALANCED ECO-SYSTEM**

1.5.4 REVIVAL OF AQUATIC FAUNAL AND FLORAL BIO DIVERSITY.

1.5.5 FLOOD PROTECTION

Restoration of Nirmal Water Flow is the key objectives other are subsidiary to its clean environment

1.6 WHY A WORK PLAN?

To achieve the above stated objectives, there should be a document so that the desired work for achieving of objective is accomplished well guided and well in time. A document which is practical, workable, less academic, less theoretical, however, technical to the extent of requirement of execution, comprehensive and full of possible answers to all probable doubts free from ambiguity. The work plan must be a document that can guide at every step that can fix every task and responsibility. The work plan need to be capable to ensure quality work through effective monitoring system and capable of accomplishing this difficult job in stipulated time by deploying a committed team. To write this plan various designs, several Performa's and measures to collect inventory of information from concerned department and persons that we need to be used in the plan. The document must speak about the origin, past history, present situation, account of problems in the first part and they will be separate chapter for separate intervention for or behalf on the departments involved in rejuvenation program in the second part of the plan extermination of expenditure, provision of budget, time, allocation, working agencies and monitoring arrangements will also being explained. Work plan is expected to cover important issue like:

- 1. Revival Of Dying River**
- 2. A Regular Work Plan Needed For Guidance**
- 3. To Avoid Aphorism**
- 4. To Achieve Target For NIRMAL HINDON**
- 5. Reverting The Process Of Pollution**

To accomplish the this writing work of plan needs lot of data and information regarding different activities and important interventions during discussion in number of meetings headed by Commissioner, Meerut and Chairman, Nirmal Hindon Initiative it has been decided that a questionnaire will be prepared and circulated to the district magistrate of all the seven district so as to collect important information. This information will be provided to all those department and the persons in charge or responsible to prepare work plan. The chairman, NIRMAL HINDON has constituted a twelve member committee

1.7 THE PROBLEMS

Main problems can be enumerated as pollution and pollutants, effect of pollution which can be industrial, sewage generation and municipal solid waste. Environmental hazard ecological imbalance biodiversity dwindling, aqua flora and fauna dead, water quality not potable and health of living beings contamination of water and serious elements has a part of health hazard. The work plan is expected to address all these problems at appropriate places in concerned chapters.

1.8 STRATEGY

The work plan has to devise an intelligent strategy so as to provide solution to the above stated problems. As a part of strategy we need to prioritize the desired activities or interventions and then identify the operations in the field of environment, ecology, biodiversity, health, irrigation, scarcity of portable water and journal rural economy interventions above all the main strategy has to target the goal how to make Nirmal Hindon.

The works identified to be undertaken will be allotted to concerned department with a physical and financial target and to accomplish in a stipulated time. There will be a clear mention about the results of existing infrastructure and allocation of works will be according to the efficiency, competency and expertise of the department or NGO organizational setup will be discussed in reference with the work load in each sphere and activities will be taken up in accordance with prioritization already done. There will be a separate chapter for each type of activity.

Based on geology, meteorology and other align database information a work plan has been formulated for required treatment of the problem. Our endower will be to describe all the activities under each segment with specific details the working plan will specify the place of intervention, type of intervention, magnitude, estimated expenditure, Implementing agency, time schedule and expected results of the interventions, constructions and inputs. This may include construction of ETP, STP at selected places, construction of ponds at suitable places, plantation in the available land along the river and its tributaries provision of alternate drinking water, health services, veterinary services and exploring possibilities of getting additional water to add into Hindon River and its tributaries. So as to provide an opportunity of automatic cleansing of water and restoration of eco-system of the basin.

1.8 PARTICIPATORY APPROACH

To achieve a dynamic and growing civil society movement



for rejuvenation of surface water bodies and ground water participatory approach is essential. Fortunately there is very positive response from all stakeholders and the momentum is gaining quick speed in the Hindon river basin.

The rivers are defined as veins and arteries of our mother earth and if they are not clean or healthy nation can never prosper. That is the reason that across the country a realization can be seen. For this purpose they also Initiated awareness campaign and environmental educational program for children and youth in schools. The Government of India as well as State Government of Uttar Pradesh have also shown concerned and initiated integrated and participatory interventions. A number of industrialists too have realized their responsibility and have installed effective arrangements to check effluents. In this per plan our endower will be to involve community and Accomplish maximum of our interventions through people's participation