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Proceedings of the Nirmal Hindon Technical Workshop on Knowledge Sharing and Capacity Building of Stakeholders for Preparing a Road Map for Collective Action for Hindon River Rejuvenation

In joint collaboration with:

Nirmal Hindon Initiative
India Water Partnership,
WAPCOS Limited,
2030 Water Resources Group
&
INTACH

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I. Introduction & background

1.1 The current state of the Hindon River basin

The Hindon River, a tributary of Yamuna River originates in the Saharanpur District from Upper Shivalik in Lower Himalayan Range. The River and its tributaries, Kali and Krishni River, traverses for about 400 kilometres (250 mi) through seven districts of Uttar Pradesh i.e., Saharanpur, Muzaffarnagar, Meerut, Baghpat, Ghaziabad, Noida, Gautam Budh Nagar before joining Yamuna river at its confluence point. The river is entirely rain fed.

It is a matter of great concern that the Hindon River and its tributaries are now highly polluted and have turned into drains. There are multiple causes for this situation. Industrial entrepreneurship has replaced early stages of human civilization. The water quality of river Hindon further gets deteriorated due to confluence of River Kali and Krishni which receive effluents from different industries (sugar, paper, pulps, distilleries & others) supported by untreated municipal wastes.

Loss of vegetation, environmental hazards and pollution are inevitable consequences of unplanned developmental activities. Over-abstraction of groundwater and use of chemicals and fertilizers in agriculture are contributing to the deteriorated status of the river. Toxic pollutants ultimately reach the ground water and enter the food chain, thus posing a threat to human health, due to this the river is now on the verge of death as the toxic levels in the river water have reached the extreme levels.

1.2 Stakeholders working tirelessly together to rejuvenate Hindon basin

The grim picture of Hindon (Harnandi) river has been much highlighted by environmentalists and National Green Tribunal (NGT) and also by print and TV media. At the same time many groups, individuals are tirelessly engaged in a valiant attempt to save the river.

Apart from common citizens and NGOs in their efforts to revive the Hindon river, Dr. Prabhat Kumar, IAS, Commissioner, Meerut Division has taken up revival of Hindon river and its tributaries on his top priority agenda and has started efforts along with his officials (Line

Departments- Pollution Control, Forestry, Irrigation, etc.) and citizen groups together for this noble cause.

In 2016, the State Government of Uttar Pradesh had also set-up a high-level interdepartmental Committee chaired by the Chief Secretary of Uttar Pradesh to provide guidance to the transformation of Hindon's water resources management.

The 2030 Water Resources Group and India Water Partnership brought together stakeholders across the Hindon River basin, to develop a collective approach to river rejuvenation. Good practice examples by State Government, NGOs, Research Organizations, and Citizen Action Groups were recorded and shared with the stakeholders. To integrate all the efforts (research, activism and field work) a holistic approach to rejuvenate Hindon river and its tributaries was felt of utmost importance. On request of the State government an integrated vision was developed with all stakeholders that focuses on entire river eco-system across different water user sectors.

A comprehensive River Basin Master Work Plan is now being developed by the secretariat of the Nirmal Hindon Initiative, to facilitate implementation of an integrated rejuvenation program of river Hindon and its tributaries. In the meantime, the chairperson of NHI identified five "verticals" for immediate action: afforestation, ponds & wetlands, green agriculture & organic farming, waste management and participation & governance.

INTACH's Natural Heritage Division has attempted to put together a comprehensive fact base compiling available data on the current status of the Hindon basin from an integrated river basin perspective. A summary of the report was presented at the technical workshop as input into the discussions.

2.2 Purpose of the Technical Workshop on 9th of June 2018

A. **KNOWLEDGE SHARING:** The main objective of organizing this workshop was to share river basin knowledge and experience gathered by various organizations during their research studies and/or field work. To understand the hydrological and ecological system of the Hindon river basin, INTACH carried out an extensive study. The possibilities of assimilation of the shared knowledge and experience would help in preparing an integrated River Basin Master Work Plan by Nirmal Hindon Initiative (NHI) to rejuvenate the river in a holistic manner.
B. **DESIGNING ROADMAPS:** Through brainstorm sessions, inputs were sought from stakeholders to design roadmaps for the next 2-3 years on the basis of the five verticals the NHI Action Plan. The roadmaps should provide guiding principles from the perspective of the hydrological and ecological system of the Hindon basin to ensure impact in terms of improved water quality or water availability. The roadmaps should be

practical, workable, comprehensive, free from ambiguity and sufficiently technical to the extent of requirement of execution, which can guide the implementing agencies at every step. They should list out tasks and responsibilities and assure impact orientation through an effective monitoring system.

2.3 Specific Objectives

1. **Knowledge sharing and capacity building of stakeholders**
   a) Clarify the concept of a river basin as one geographic, biological, hydrological and economic unit across administrative borders;
   b) Establish a common fact base (both water availability and quality) about Hindon river basin for stakeholders from different backgrounds;
   c) Emphasize importance of mid/long-term planning based on an understanding of the river basin approach and an integrated vision for Hindon rejuvenation;
2. **Assimilation of five NHI verticals and monitoring and evaluation frame work**
   a) Design roadmaps based on five priority areas (verticals) of NHI action plan;
   b) Introduce impact orientation and importance of monitoring & evaluation framework at Hindon basin scale and across administrative borders.
3. **Demonstrate coordinating role and visibility of the NHI Secretariat**
   Enhancing collaboration between multi-stakeholder partners that may include knowledge partners from State and local government, Institutes, NGOs, Societies, Industries and individuals.

2.4 Expected Outcome

Through the technical workshop it was expected that gaps and challenges could be identified that the Hindon River faces at present. With the support of experts and experienced stakeholders, inputs would be collected to draw up programs for its rejuvenation. It is anticipated that the NHI Action Plan will contain short-term actions (ongoing) framed by longer-term programs (2-3 years) on following five “verticals”:

1) Afforestation
2) Organic Farming
3) Ponds Rejuvenation
4) Waste Management
5) Participation and Governance

Impact oriented roadmaps for these five priority areas of the NHI Action Plan are expected to result from the workshop. They will be presented and approved in the next NHI committee

meeting, (co-)chaired by Divisional Commissioners of Meerut and Saharanpur (as stipulated in the Government Order of 21 March 2016).

3. Program, participants and organisers

3.1 Program outline

The detailed workshop program is attached as **Annex-I.**

9:00 Registration

9:15 – 11:40 PLENARY SESSION

- Welcome & introduction
- Facts of Hindon & understanding rivers
- Need for long term river basin planning

11:45 – 13:00 PARALLEL BRAINSTORM GROUPS

- Afforestation
- Organic Farming
- Ponds Rejuvenation
- Waste Management
- Participation & Governance

13:15 – 14:30 PLENARY SESSION

- Roadmaps for each vertical
- Conclusions

14:30 Lunch

3.2 Target group

Participants were a core group of about 50-60 relevant technical experts from government administration, civil society, industry and research.

3.3 Organizers

The workshop was jointly organized by Nirmal Hindon Initiative, India Water Partnership, 2030 Water Resources Group, WAPCOS Ltd. and INTACH's Natural Heritage Division.

4. Workshop Proceedings

With above background and objectives, a one day "**Nirmal Hindon Technical Workshop on Knowledge Sharing and Capacity Building of Stakeholders for Preparing a Road Map for Collective Action for Hindon River Rejuvenation**" was organized on 9th of June, 2018 at Office of the Commissioner, Meerut Division (Uttar Pradesh) in joint collaboration with Nirmal Hindon Initiative, India Water Partnership, WAPCOS Ltd., 2030 Water Resources Group and INTACH. A total number of 85 participants representing all the 5 verticals mentioned above (Government officials, NGOs, Companies, Academia) besides media representatives attended the workshop.

Pictorial view of the Knowledge Sharing & Capacity Building of Stakeholders for preparing a Road Map for Collective Action for Hindon River Rejuvenation

4.1 Plenary Session

Keynote Address by Dr. Prabhat Kumar, I.A.S, Commissioner, Meerut Division

The workshop was inaugurated by Dr. Prabhat Kumar, I.A.S, Commissioner, Meerut Division at Conference Hall of Commissioner, Meerut, Uttar Pradesh by lighting of lamp. In his key note address he said that last year we have started Nirmal Hindon Initiative and during this period a lot of works have been done, but there is a need to quantify and measure the impact of the interventions done in the past from time to time with less resource. It is therefore necessary to develop the tangible indicators to measure the impact. Highlighting the various technological inputs, the Commissioner said that how the small scale and low cost innovative technologies can help in maintaining Nirmal and Aviral Dhara in Hindon river need to be explored. He said that it is equally important to diagnose the reasons for pollution and go for the treatment. Emphasizing the importance of monitoring indicators, he said that mindset, timeliness, punctuality and dutifulness of each stakeholder is of paramount importance for rejuvenation of Hindon river. For the roadmaps for each vertical to be prepared through group discussions, the Commissioner requested participants to address the questions why, what, where, when, how, who and how much.

Lighting of Lamp by the Chief Guest Dr. Prabhat Kumar, I.A.S, Commissioner, Meerut Division

Remarks of Dr. Veena Khanduri, Executive Secretary-cum-Country Coordinator, India Water Partnership on Need for long term river basin approach and role of secretariat to monitor results and impact

The keynote address was followed by remarks by Dr. Veena Khanduri, Executive Secretary-cum-Country Coordinator, India Water Partnership. In her address, she informed the participants that: The problems in the Hindon basin are diverse and complex and hence an integrated river basin approach with multiple solutions are required. The government alone cannot solve these problems. We require multi-stakeholders with different expertise to help the Government. That is why a participatory approach, and I am happy that the Commissioner, Meerut gave India Water Partnership, WAPCOS and 2030 Water Resources Group the opportunity to support the Nirmal Hindon Initiative (NHI) Secretariat.

Veena Khanduri further said that the Commissioner has identified **five priority areas** to initiate work through Nirmal Hindon Initiative with the support of respective District officials under Hindon basin. Currently, work plans for the next 6 months are being made per District. But today we will discuss the relationship between the planned interventions and the hydrological unit of the river basin. We need to ensure that the current and future activities are designed and implemented in such a way, that they have a measurable and positive impact on the water flow and reduction of pollution load in the Hindon basin.

Stressing upon importance of hydrological unit in the context of Hindon basin, she said that this takes into account both surface and ground water and incorporates quantity and quality aspects as well as biodiversity of all the associated tributaries of Hindon river. Concluding her remarks, Dr. Veena Khanduri invited Mr. Sajid Idrisi, INTACH to present facts of Hindon River.

Presentation by Mr. Sajid Idrisi, INTACH

Mr. Sajid Idrisi, INTACH in his presentation highlighted need for a Basin Approach vide the National Water Policy-2012 which also emphasize that hydrological unit is the river basin, which should be considered as the basic hydrological unit for planning. He mentioned that the basin faced declining rainfall. Average annual rainfall which was 887.7 mm during 1951- 2000 came down to 780.9 mm during 2001- 2012 and it has further decreased during 2012 -2016 to 680 mm. Forest cover in the basin is a merely <2% & dense forest has reduced by 26.5%. Groundwater exploitation is 100% in Hindon basin and at present Hindon Basin is surviving on imported waters from Upper Ganga Canal. In the basin sugarcane is dominated crop and using total basin Irrigation Water of 5748 MCM, which is 72.8 % of total irrigated water in the basin. Systematic intensification of crops and sugarcane as well as by practicing conservation agriculture is required which will reduce water input by 40-50%.

Presentation by Dr. Manu Bhatnagar, Principal Director, INTACH

In his presentation, Mr. Manu Bhatnagar pointed out that bulk of the attention was being devoted to the visible and media attracting pollution issue, the far more serious and intractable problem was the lack of flow, regaining which is impossible without a river basin approach. He explained the structure of rivers as well as the hydrological processes in the basin covering different stages, course and components of river. With the help of old maps, he demonstrated the perennial nature of Hindon and its tributaries as well as how the Banganga originated from forested zone of Kohanabad RF.

- River flow: The fact was highlighted that Hindon was used to transfer Upper Ganga Canal waters to Yamuna using Hindon as a conveyor thus robbing the river of its natural character while using it as a transfer canal. This function made it very difficult to establish environmental flows. Thus, the basin is living on borrowed water by continuous 'blood' transfusion from the Ganga. The hydrological destruction of the basin was further highlighted by the loss of the Hindon Distributary which had been converted into the NOIDA Drain.

- Encroachment: The damaging impact of floodplain encroachment and loss was also dwelt upon. Demarcation of the 100-year flood plain and conservation of the same was suggested. He emphasized the need to implement the Ganga Authorities Notification of 7 October 2016 which explicitly forbade construction on the one in 100 years flood plain of Ganga River, its tributaries and their further tributaries.
- Water balance: As against total rainfall endowment of 4156 MCM the total water demand of the basin was 8679 MCM. While the total rainfall endowment of the basin was some 4156 MCM the irrigation demand alone was 7894 MCM of which 73% was consumed by sugar cane alone.
- Groundwater recharge: Instead of random improvement of ponds he suggested creating rain water storages along paleo-channels identified through remote sensing.
- Agriculture: His recommendations included changing the cropping pattern by reduction of sugarcane acreage, promoting SIC methods in crops as well as sugarcane to reduce water consumption by 30%, practicing conservation agriculture on a widespread basis, aquifer management, recycling treated domestic wastewater and industrial effluent for irrigation, the use of decentralized wastewater treatment methods, the use of dense riparian vegetation as bio filter to trap agricultural chemicals from reaching the river. For spreading farming practices, he advised having demonstration plots in each village ["one village - one demo plot"].
- Afforestation/green cover: He stressed upon the relationship between near absent forest cover and declining rainfall and the obvious need to reconfigure the landuse and land cover pattern. The decline of forest and ground water assets at Hindon basin level was reflected at the sub-basin levels of Krishni and Kali rivers. As a prescription he stressed upon the rapid densifying of forests in upstream areas of Kaluwala range, densifying of existing forest as core areas and prioritizing tree plantation in the buffer zone of these. In the absence of land, he recommended promotion of agro-forestry practices along the watershed line. He also suggested that each village create its own forest ["one village - one forest"] as a sacred grove in its area.

Introduction to the Proceedings of Forenoon Session by Mr. D V Kapil, IFS (Retd.) – Coordinator, Nirmal Hindon Initiative

Mr. D V Kapil, IFS (Retd.) – Coordinator, Nirmal Hindon Initiative introduced the proceedings of the forenoon session of the workshop and invited the participants of each vertical to join the group discussions.

4.2 Group Discussions

The main purpose of Group Discussions was to prepare roadmaps for 2-3 years for each of the five priority areas (verticals) of the Nirmal Hindon Initiative which are: **Afforestation, Organic Farming, Waste Management, Ponds and Governance & Participation**. The five groups were formed separately to discuss each vertical. Summary of discussions about each vertical is given below.

4.2.1 Afforestation

Under the group afforestation a very healthy and lively discussion was held between 9 participants in the session of the Technical Knowledge Workshop on 9th June, 2018. Mr. V.K. Jain, IFS, Chief Conservator of Forests, Saharanpur chaired and initiated the discussion covering the predesigned questions. As moderator Shri D.V. Kapil IFS Rtd. and Coordinator, NHI vigilantly regulated the flow of smooth discussion and assimilation of views of every participant. A considerable concern was visible in the deliberations of the participants about fast degradation of forest in the Upper reaches of Shivalik and in the basin of the Hindon River. The team was of the opinion that loss of vegetation; environmental hazards and pollution are inevitable consequences of unplanned development activities. The discussion points were as per below.

Photo of Group Discussion-Afforestation:
Chairman Mr. V K Jain, IFS, Chief Conservator of Forests, Saharanpur District and Moderator, Mr. D V Kapil, IFS (Retd.) & Coordinator, NHI

How Afforestation helps to rejuvenate the Hindon river basin

- Capture water and moisture,
- Conserve Soil.
- Filter and recharge ground water.
- Conserve biodiversity & wild life.
- Develop micro climate and aesthetic beauty.
- Improve health by reducing the pollution level.

Guidelines for afforestation

- Preference should be given to native species, fruit bearing and Agro Forestry species.
- Green belt development in at least 30-50 m along bank.
- Participatory model should be prepared for plantation.
- Protection and maintenance up to 5 years
- Effective monitoring and evaluation system.

Implementation suggestions

For the actual plantation works following points are important:

- Identification of plantation area and divided in 5 phases for 5 years.
- Each 1/5 of the suitable/available area should be selected in proportion.
- Provision of funds.
- Advantage of Prevailing Govt. Schemes like Krishak vrikhshadhan yojna, Mukhyamantri faloudyan yojna & Samudayik yojna.
- Prepare Village wise micro plan, Dist. plan and Basin plan well in advance.
- Van Mahotsav should be arranged carefully only at the place where definite arrangement of plant protection and maintenance is available
- Identification of Suitable land availability, either it is Govt. land, Community land or Pvt. Land.
- Empanelment of a planting agency with good track record.
- MoU with planting Agency.
- Selection of native species plants.
- Water logging resistant or species which can thrive in water logging conditions.
- Replacement of causalities.
- Standard size of plants, standard size pits with proper manuring and maintenance mechanism.
- Ex- Palwal plantation, DMRC divider Loni plantation.

Suggested result indicators

- No. of trees planted per district.
- No. of trees survived after one year, after second upto fifth year.

Suggested Impact Indicators

- Ground water level.
- Surface water level
- Biodiversity (Ex- Migratory birds)
- Microclimate (Rainfall & Temp)
- Time series change (Through LULC - Land use, Land change)

The points discussed during the workshop will be used to develop a road map for 2-3 years with necessary actions for afforestation in the Hindon Basin.

4.2.2 Solid Waste Management

Under the group Solid Waste Management, a very healthy discussion was held to build an effective roadmap for coping with the problem of solid waste flowing in and around the Hindon River. In the Solid Waste Management group 14 participants were there including members of Nagar Nigam, Nagar Palika, experts of Solid waste management, and representatives of different NGOs. Mr. Lokpal Singh ADM (FIR) Baghpat chaired the discussion covering the predesigned questions. Dr. Veena Khanduri, Executive Secretory-cum-Country Coordinator, India Water Partnership moderated the discussion around five pre-designed questions. As the group members were representing the rural and urban background, it was decided to mainly focus on rural and peri-urban scenarios. Before addressing waste water issues, the solid waste management would be addressed first. The main points of the group discussion on Solid waste management are given below.

How solid waste management helps to rejuvenate the Hindon river basin

- Proper management of waste will improve the quality of water flowing through the river.
- Managing waste will decrease the pollution load and hence decrease the B.O.D.
- Drains act as carrier of solid waste which – apart from plastics - mostly contains cow dung and waste material, dumped by communities near the drains, removal of such waste will increase the river flow.

Photographic view of Group Discussion-Waste Management
Chairman, Mr. Lokpal Singh, ADM (FIR), Baghpat & Moderator, Dr. Veena Khanduri, Executive Secretary-cum-Country Coordinator India Water Partnership

Guiding principles for solid waste management in rural and peri-urban areas

- Segregation at source should be promoted. Urban colonies, industries and hospitals should strictly follow rules to segregate their degradable and non-degradable waste.
- Decentralised treatment of solid/liquid waste (collection, disposal and composting) should be promoted
- Recovery, reuse and recycle of resources and promotion of concepts like Waste-to-Wealth.
- Qualitative as well as Quantitative approach should be made for cleaning the drains.
- Social workers should adopt wards or areas and look after management of waste in their areas that can prove to be a model for others.
- People should be more aware for proper disposal and management of waste.

Suggestions for implementation

- SWM projects should be initiated under Rural Swachh Bharat Mission. Gram Pradhans of almost 800 villages of Hindon basin have to take the lead under the guidance of Deputy Director Panchayat Meerut and Saharanpur division.
- Effective solid waste management policy 2016 should be implemented strictly.
- Segregation of solid waste to be done at town, village and district level.
- Awareness generation through regular workshops and mobilizing communities for decentralized waste collection, segregation, composting, recycling and disposal.
- Panchayat can arrange to collect household waste for disposal at selected dump site by collecting waste with minimum charges from the household.
- Urban colonies, industries and hospitals should strictly follow rules to segregate their degradable and non-degradable waste.
- Proper committees should be made to work at core problems and responsibilities should be distributed to voluntary committee.
- Techniques like installation of bio gas plants should be promoted at village and district level.
- Directions to bulk generators for segregation and disposal of waste at source by installing composting machines/techniques on their own.
- Make competitive environment in urban and rural areas for “Cleanest City or village”.

Suggested result targets

- Number of schools started SWM at school campus
- Metric tons of solid waste safely disposed per month at town/village/ district level
- Number of committees established at town, village and district level to promote segregation of waste

Suggested Impact Indicators

- Number of ponds free from solid waste in particular village/ward/town
- Number of drains cleared for free flow (with no clogging due to solid waste) in a particular village/ward/town

By considering these points discussed in the group discussion an effective roadmap can be made for solid waste management.

4.2.3 Organic Farming

Chairman of this vertical was Mr. Sunil Kumar Agnihotri, JDA, Meeut and the Moderator was Dr. Ritu Singh, INTACH. All participants agreed on advantages of sustainable organic farming. The group discussed the following points below.

Photo of Group Discussion-Organic Farming
Chairman, Mr. Sunil Kumar Agnihtori, JDA, Meerut, and Moderator, Dr. Ritu Singh, INTACH

How organic farming helps to rejuvenate the Hindon river basin

- Increases the water holding capacity.
- Increases water recharge.
- It improves ground water quality.
- Controls soil erosion.
- It improves soil health.
- Water is conserved due to less use of irrigation water.
- Fungal disease diminishes due use of surface water.
- Organic framing controls the pollution.
- It leads to decrease in global warming.

- It supports animal health.
- Encourage the bio-diversity.

Guiding principles for organic farming in relation to river rejuvenation

- Attempt to qualitative change in mental consciousness.
- Promoting bio-diversity.
- To inform about the effects of the use of chemicals in agriculture as well as the diseases caused to the farmers.
- Understanding the use of organic farming and economic analysis as well as economic benefits.

Suggestions for implementation

- A group of 15 to 20 farmers to be formed in the selected villages.
- Soil testing to be done.
- Prepare a Master Plan as per soil type and select crops according to requirement of irrigation.
- Give information to the farmers group about certification, production, processing, marketing and branding.
- Prepare F.P.O.
- The identified farmers will be provided appropriate training and guidance, to build their capacity, both physically, mentally, intellectually and theoretically.
- A model of organic farming should be prepared so that all the farmers should be encouraged.

Suggested result targets for the first phase of a longer-term program:

- 10 villages of each block under Hindon river should be selected.
- In each village 20 farmers should be selected.
- One acre of each farmer land should be taken under organic farming.
- At start of the program at least 560 ha. of farming land to be taken for organic farming in all the 7 districts of Hindon basin.

Suggested Impact Indicators

Sustainable farming leads to soil moisture increase, at the same time soil compaction decrease. This enables water ingression increasing water holding capacity and infiltration rate of the soils. Higher infiltration accounts for groundwater recharge in elevation in water table.

Indicators:

- Amount of water saved, by measuring water usage in demonstration plots
- Less irrigation requirement according to crop requirement (increased water use efficiency)
- Improved water tables due to reduced fresh water abstraction from ground- and surface water sources.
- Water quality analysis of both surface and ground water levels
- Soil water infiltration analysis post-harvest in Rabi season every year

Note: the relation of sustainable farming to hydrology was discussed and it was highlighted that the effect of **small demonstrations and/or scattered plots** could not be realized on the water table in measurable quantities. To realize a positive effect of sustainable farming on the water table and base flows of the river, it should be carried forward on landscape scale.

4.2.4 Ponds Rejuvenation

The group discussion of ponds rejuvenation was chaired by Mr. H N Singh, Drainage Department, Meerut and moderated by Ms. Annelieke Margreet Laninga, 2030 Water Resources Group. Summary of discussion is as under:

Photo of Group Discussion-Ponds rejuvenation:
Chairman, Mr. H N Singh, Drainage Deptt, Meerut and
Moderator, Ms. Annelieke Margreet Laninga, 2030 Water Resources Group

How ponds can help to rejuvenate the Hindon river basin

- The group agreed that for rejuvenation of rivers, ponds (water conserved in it) play an important role as they help in recharging the ground water.
- And water slowly moves to the rivers through percolation. So, priority should be given to ponds rejuvenation.

Guiding principles for ponds restoration in relation to river rejuvenation

- Recharge points should be constructed in the watersheds.
- Priority should be given to restoration of existing natural ponds before digging new ponds.
- Sewage and dirty water from the village should be diverted into one or two ponds only which should be treated, so that only clean water falls into the other ponds in monsoon period. If interception and diversion of drains is not (completely) feasible due to gradient and layout of the built-up land, a settling tank and inlet wire mess to be installed to prevent the solid waste and sewage water to enter the recharge pond.

Suggestions for implementation

- Concrete/holistic Work Plan to be developed for rejuvenation of ponds along the Hindon river so that the ponds should get momentum.
- Ponds located within the radius of 2 K.M of both sides of banks of Hindon river and its tributaries should be demarcated and their village-wise and block-wise list should be prepared.
- Work should start in demarcated ponds for restoration with the support of NGOs/Industries or other agencies.
- Link NGOs/Industries or other agency for rejuvenation of ponds and its maintenance who will work in close coordination with Hindon river samities formed in each village of the Hindon river .
- Ponds should be given a name on which the people can culturally and emotionally join and aware for their maintenance considering their importance and usefulness.
- The ponds should be developed in a right earnest manner, possibly through Gram Panchayat funds so that cleaning of ponds and maintenance may be done from time to time.
- More and more ponds should be constructed under Farm-Pond scheme of farmers in their agricultural fields.
- For rejuvenation of big ponds and lakes, R R R scheme of Government may be considered.

- Industries along the Hindon river basin should utilize their CSR funds for ponds rejuvenation
- The village should be prohibited to use submersible pumps and there should be control on extracting ground water so that water level in ponds and underground remains constant.
- Check dams/Bandhia/Ponds should be constructed at the origin of Hindon river and its tributaries.
- Check dams/Bandhia should also be constructed along the area/portion of the rivers where dirty water does not arrive.
- Agreed result targets: The group agreed to follow the principles and work plan of rejuvenating the ponds within three years. In each year taking into account 1/3 of the demarcated ponds, plan should be made to rejuvenate all the ponds within 3 years.

Suggested result indicators/targets

- Increase in number of ponds each year.
- Increase in area of ponds each year.

An Audit Report to be prepared and circulated measuring increase in area of the demarcated ponds, increase in groundwater level and increase in water level in the river due to percolation of water from ponds so that works done in the past can be measured.

Suggested Impact Indicators

- Increase in water table of groundwater each year.
- Increase in river water table due to percolation of water.

4.2.5 Participation & Governance

Chairman of this vertical was Shri Jai Shankar Dubey, Additional Commissioner, Meerut and moderator was Dr. Manu Bhatnagar, Principal Scientist, INTACH.

Summary of discussion:

- Ensuring continuity of initiative by obtaining a directive from State Govt. that successive heads of NHI have to accord top priority to the initiative
- There would be sub-basin committees for the main tributaries [Kali, Krishni] headed by DM of the District containing origin point and/or longest stretch. Structure of Committee not elaborated but may include select Gram Pradhans by rotation, NGO reps [not exceeding 2], expert rep.

- Basin should have a basin data centre with its website where data on basin basis [not whole district basis] may be put on line. The categories of data would be determined and training for same be imparted to relevant organizations. Weather forecasting training and basic equipment for same be provided to several NGOs who in turn would blog their forecast on the website

Photo of Group Discussion- Participation and Governance

- Biodiversity Management Committees to be formed in all villages and these are to be activated as per current support systems
- Monetary incentivization program for villages which achieve 100% coverage/conversion to conservation agriculture
- Water Audit programs for large industrial units and institutions
- Formation of awareness raising task force under GPDP
- Skill development to be undertaken in area of composting, constructed wetlands/DEWATS, water testing skills
- Role of political representatives to be worked out
- Ist Order stream parliaments/panchayats to be established for eco-restoration of these streams
- Green manifesto for Basin to be written
- Regulation of floodplain to be established as per Ganga Notification steadily
- The water audit system needs to scrutinize the water impact of new investments (institutional, commercial, industrial) and allow them only if water neutral (through scientific harvesting and recycling, efficiency). This would include infrastructure works and modify them for hydrological impact.
- Basin governance bias to become distinct layer of district administration by having distinct subsets of data, organization, financial flows, support.

<u>Specific governance related suggestions related to other NHI verticals:</u>

Ponds:

- Improving groundwater governance by protecting the areas of high recharge potential [such as identified paleochannels] from concretization and chemical fertilizers on priority

- Improving groundwater monitoring through participatory approach by mapping dugwells and tubewells and providing real time depth of water data

Afforestation:

- Amendment to tree cutting regulations to enable tree framing and agro-forestry - providing compensation for providing eco-system services
- Villages to offer lands for village forests as sacred groves

Green agriculture /organic farming:

- An interactive agriculture experts group to engage with farmers on agronomy practices and cropping pattern to be set up

4.2.6 Concluding Remarks by Commissioner, Meerut Division

During the plenary session the group chairmen presented the results of their group discussions, following which the Commissioner, Dr. Prabhat Kumar, gave his concluding remarks. He suggested that we have to change our approach from I to we, individual to community/society, compaign to mindset/culture, treatment/rehabilitation to prevention and dirty drain to Holy river. He said that he is hopeful that each vertical coordinator will come up with a firm up program taking into account **why, what, when, where & how** the program will be formulated. Citing examples of works undertaken by different stakeholders in the recent past, he stressed the need for monitoring of the works to measure the results.

Specific points mentioned by the Commissioner:

- One attractive and mind-catching slogan could be designed for each vertical of the Nirmal Hindon Initiative
- The Chairman of each vertical with support of Moderator should finalize the recommendations for the workshop report and help the NHI Secretariat to prepare the Roadmap for Hindon river rejuvenation
- Local urban bodies can play an important role too
- There should be utmost priority to sensitize village pradhans to take up the programs as per availability of panchayat funds.
- Convert agriculture waste into fertilizers

The detailed workshop program, list of participants and the presentations are attached as ***Annex-I, Annex-II*** and ***Annex-III*** respectively.