



# Annual Report



**GORAKHPUR  
ENVIRONMENTAL  
ACTION GROUP  
(GEAG)**



**2017-18**



# Foreword

The year 2017-18 has been very engaging for GEAG where we embarked upon several new initiatives and made great strides in our thematic operations. The rapid pace of urbanization in India is posing new challenges of safe and healthy urban life. Increasing disaster events, exacerbated by climate change impacts, are a major concern due to development deficit, poor governance, resource constraints and deteriorating ecosystem services. Child-focused climate resilience was one of the unique initiatives that GEAG undertook this year to work with city governments in several Indian states to develop child-focussed climate resilience strategies and evolve approaches and frameworks that govern them. Nature-Based Solutions has been another key approach of GEAG in its research, advocacy and implementation of relevant activities in promoting disaster and climate change resilience and livelihoods of marginalized communities with our legacy of people-led actions. We have tried to undertake locally appropriate solutions with innovative approaches to address these challenges.

Our recognition, during the year, as Core Support Partner by Ministry of Science and Technology, Government of India for exploring appropriate science and technology solutions for climate resilient agriculture in the local context and Key Resource Centre for Swachh Bharat Mission-Gramin by the Ministry of Drinking Water and Sanitation, Government of India for providing technical and capacity building support to the programme, have been quite helpful in pursuing our role as a facilitating organization.

We take this opportunity to profusely thank our donors and support providers, networking and collaborating partners, Executive Board, GEAG Team, media and well-wishers for their continued support and encouragement.



**Dr Shiraz A Wajih**  
**President**

# Contents

Foreword	3
Abbreviations	5
The Organisation	6
Our Cornerstones	8
GEAG's Footprint	10
Climate Change and Disaster Risk Resilience	13
Water Governance and River Basin Management	21
Peri-urban Ecosystems for Urban Resilience	25
Sustainable Livelihood Systems	31
Gender and Agriculture	37
Health and Nutrition	41
Sanitation	47
Publications, Outreach and Networks	53
GEAG's Balance Sheet: 2017-18	57
GEAG Team Members	58
Executive Board Members	59

# Abbreviations

<b>ACCCRN</b> Asian Cities Climate Change Resilience Network	<b>ICLEI</b> International Council for Local Environmental Initiatives	<b>PVO</b> Private Voluntary Organization
<b>AFP</b> Acute Flaccid Paralysis	<b>IEC</b> Information Education Communication	<b>PWD</b> Public Works Department
<b>ANM</b> Auxiliary Nurse Midwife	<b>IFA</b> Iron Folic Acid	<b>RI</b> Routine Immunisation
<b>ASHA</b> Accredited Social Health Activist	<b>IGSSS</b> Indo Global Social Service Society	<b>RUAF</b> Resource Centres on Urban Agriculture and Food Security
<b>AWW</b> Anganwadi Worker	<b>IRRI</b> International Rice Research Institute	<b>SAN-UP</b> Sustainable Agriculture Network-Uttar Pradesh
<b>BoD</b> Board of Directors	<b>ISET</b> Institute for Social and Environmental Transition	<b>SAPCC</b> State Action Plan on Climate Change
<b>BSPM</b> Bal Swasthya Poshan Mah	<b>KRC</b> Key Resource Centre	<b>SBCC</b> Social Behaviour Change Communication
<b>CBDRR</b> Community Based Disaster Risk Reduction	<b>LEISA</b> Low External Input Sustainable Agriculture	<b>SBM</b> Swachh Bharat Mission
<b>CCA</b> Climate Change Adaptation	<b>MAA</b> Mothers' Absolute Affection	<b>SIA</b> Supplementary Immunisation Activities
<b>CHC</b> Community Health Centre	<b>MGNREGA</b> Mahatma Gandhi National Rural Employment Guarantee Act	<b>SLD</b> Shared Learning Dialogue
<b>CLTS</b> Community Led Total Sanitation	<b>MI</b> Micronutrient Initiative	<b>SOP</b> Standard Operating Procedures
<b>CMC</b> Community Mobilisation Coordinator	<b>MN</b> Micronutrient	<b>SPA</b> School of Planning and Architecture
<b>CMPA</b> Combined Medical Practitioner's Association	<b>NABARD</b> National Bank for Agriculture and Rural Development	<b>TAL</b> Terai Arc Landscape
<b>CPR</b> Common Property Resources	<b>NDMA</b> National Disaster Management Authority	<b>ToT</b> Training of Trainers
<b>DDMA</b> District Disaster Management Authority	<b>NI</b> Nutrition International	<b>UCCR</b> Urban Climate Change Resilience
<b>DDMP</b> District Disaster Management Plan	<b>NIMA</b> National Integrated Medical Association	<b>UN</b> United Nations
<b>DEWATS</b> Decentralised Wastewater Treatment Systems	<b>NGO</b> Non-Government Organisation	<b>UNICEF</b> United Nations Children's Fund
<b>DM</b> Disaster Management	<b>NIDM</b> National Institute of Disaster Management	<b>UN-ECOSOC</b> United Nations Economic and Social Council
<b>DRR</b> Disaster Risk Reduction	<b>NIPI</b> National Iron Plus Initiative	<b>VHND</b> Village Health and Nutrition Day
<b>FFS</b> Farmer Field School	<b>NIUA</b> National Institute of Urban Affairs	<b>WASH</b> Water, Sanitation and Hygiene
<b>FLW</b> Frontline Workers	<b>ODF</b> Open Defecation Free	<b>WSHG</b> Women Self Help Group
<b>FPO</b> Farmer Producer Organisation	<b>ORS</b> Oral Rehydration Solution	<b>WIFS</b> Weekly Iron Folic Supplementation
<b>GDS</b> Grameen Development Services	<b>PRI</b> Panchayat Raj Institution	<b>WRRB</b> West Rapti River Basin
<b>GEAG</b> Gorakhpur Environmental Action Group	<b>PVS</b> Participatory Varietal Selection	<b>WRWG</b> West Rapti Working Group
<b>ICAR</b> Indian Council of Agricultural Research		<b>WWF</b> World Wildlife Fund
<b>ICDS</b> Integrated Child Development Scheme		





## The organisation

Gorakhpur Environmental Action Group (GEAG), a non-profit organisation has been working primarily on the issues related to environment, climate adaptation and sustainable development since 1975. Ever since its inception, GEAG has been actively engaged in implementing several developmental projects, initiatives in reducing vulnerability and livelihood issues of small and marginal farmers, especially women, based on environmental and ecological principles and gender sensitive participatory approach.

In addition to this, GEAG has accomplished several appraisals, studies, researches along with conducting several successful capacity building trainings, workshops and programmes for various stakeholders including women farmers, civil society groups, government officials and professionals. GEAG has been successfully contributing to this field for more than 40 years now. GEAG has established its identity in India as a leading resource institution on sustainable agriculture, vulnerability assessment and strategy formulation, participatory approaches/methods and gender issues.

**Acknowledging its achievements, efforts and expertise, United Nations Economic and Social Council (ECOSOC) accorded GEAG special consultative status in the year 2000 and it also received the observer status to the Green Climate Fund in 2015.**



### VISION

A vibrant learning organization constantly maintaining its thematic and strategic relevance to the changing needs and aspirations of the communities it works with or for, that is able to meaningfully share the lessons of its experience and research with other collaborating institutions and individuals in a spirit of reciprocity and that is able to generate adequate financial, knowledge and other resources through its own means such that it can freely pursue its vision, mission and values, and function as an autonomous institution of repute in the areas of environmental sustainability and ecological balance.

### MISSION

Having acquired considerable knowledge and experience base in GEAG's programmatic themes for almost four decades, the organization wants to use it for promoting livelihoods of economically challenged agriculture-based communities and especially women through eco-sustainable agriculture methods and technologies and to refine and scale-up interventions through its various diverse roles.



# Our Cornerstones

- GEAG has been positively impacting the lives and livelihoods of several vulnerable communities, such as small-marginal and woman farmers and urban poor citizens and children, through intensive work on agriculture-based livelihoods, climate change resilience, disaster risk reduction, and health, water and sanitation. In all these years, GEAG has emerged as a renowned resource organisation working in several states in India, especially in the northern region.
- GEAG undertakes development initiatives through people-centred approach focusing on their participation, awareness and empowerment for sustainable development. GEAG highlights equitable development and environmental sustainability as the core of sustainable development and looks at development from a perspective of social justice and conservation. GEAG's work spans from support to policy making and research for sustainable development, to building the capacities of partners, to direct interventions on the ground as well as to create platforms for knowledge sharing at various levels.



- GEAG has been working on conservation, management and efficient utilisation of land, water and bio-resources with a focus on enhancing livelihood security of rural populations. Community led collective action is encouraged in the governance of shared natural resources such as forests and water bodies. Working with panchayats and local institutions as partners, GEAG helps decentralise natural resources management and demonstrates strength of local communities to deploy local knowledge to cost-effectively manage complex problems.
- GEAG collaborates with leading national and international research institutes to improve rigour in its engagement with village communities, while drawing scientists to the challenges and aspirations emerging from the ground. GEAG has expertise in research and documentation and has developed a repository of knowledge products based on grassroots evidence and policy analysis from its and its partner's work. These include case studies, major programme reports, technical reports, policy briefs, discussion papers and multimedia.

- Given the realities of climate change and its adverse impacts on the poor, vulnerable and marginalised sections of society, GEAG geared up its efforts towards climate change adaptation helping communities to build resilience against its impacts, both in the rural and urban settings. GEAG has played a pioneering role in recent years in pushing the resilience agenda by furthering the concept of climate resilient cities, protecting peri-urban ecosystems for urban resilience, as well as on improved food security supported through sustainable climate resilient agriculture.
- GEAG has also acquired specialist knowledge, skills and management expertise on urban as well as rural disaster risk resilience to climate change, which has helped generate good work across various geographies. Last year, GEAG contributed to methodological aspects of urban resilience when it used the Child-Centred Urban Climate Resilience Framework, adapted from the internationally acclaimed Climate Resilience Framework developed by ISET International. This helped in understanding vulnerabilities and in developing resilience options for urban poor children in cities.




- GEAG's climate cell has a rich repository of spatial and non-spatial information and expertise in climate-based modelling that is used for evidence based context-specific planning, implementation, and monitoring of projects as well as for undertaking studies. GEAG works beyond the traditional remit of NGOs and is one of few non-profits at the national level which has expertise in the production, communication and uptake of climate information. The organisation has scientific understanding of the climate system and forecasting capacities and is able to facilitate interactions between scientists, meteorologists, government departments, decision-makers and local communities.
- GEAG is well-positioned in its work at the local to national level and undertakes comparative assessments and studies at a country-wide level. GEAG believes in the power of community engagement and has been building strong local-level institutional arrangements. It has been working through community institutions by developing capacities of the people. It has also been engaging with the government largely to advocate best practices and support the government in adopting science-based people-led models of development. GEAG works with state and national government departments and agencies to influence the policy environment and implement programmes to influence wider replication, especially in building flexible and dynamic systems and institutions that identify and respond to the challenges that climate change poses to both rural and urban people.
- GEAG has been engaged in various types of advocacy initiatives like policy advocacy, evidence-based advocacy and so on. One of the important components of advocacy has been the rights-based advocacy by organising campaigns.





# GEAG's Footprint


Over the years, GEAG has put in efforts to provide the required leadership skills and knowledge to target communities, community based organisations, local governments and departments in enabling them to meet the challenges of increasing disaster risk due to climate change.


## Core areas of operation


  
Resilient Agriculture and Livelihoods


  
Disaster Risk Reduction


  
Climate Change Adaptation

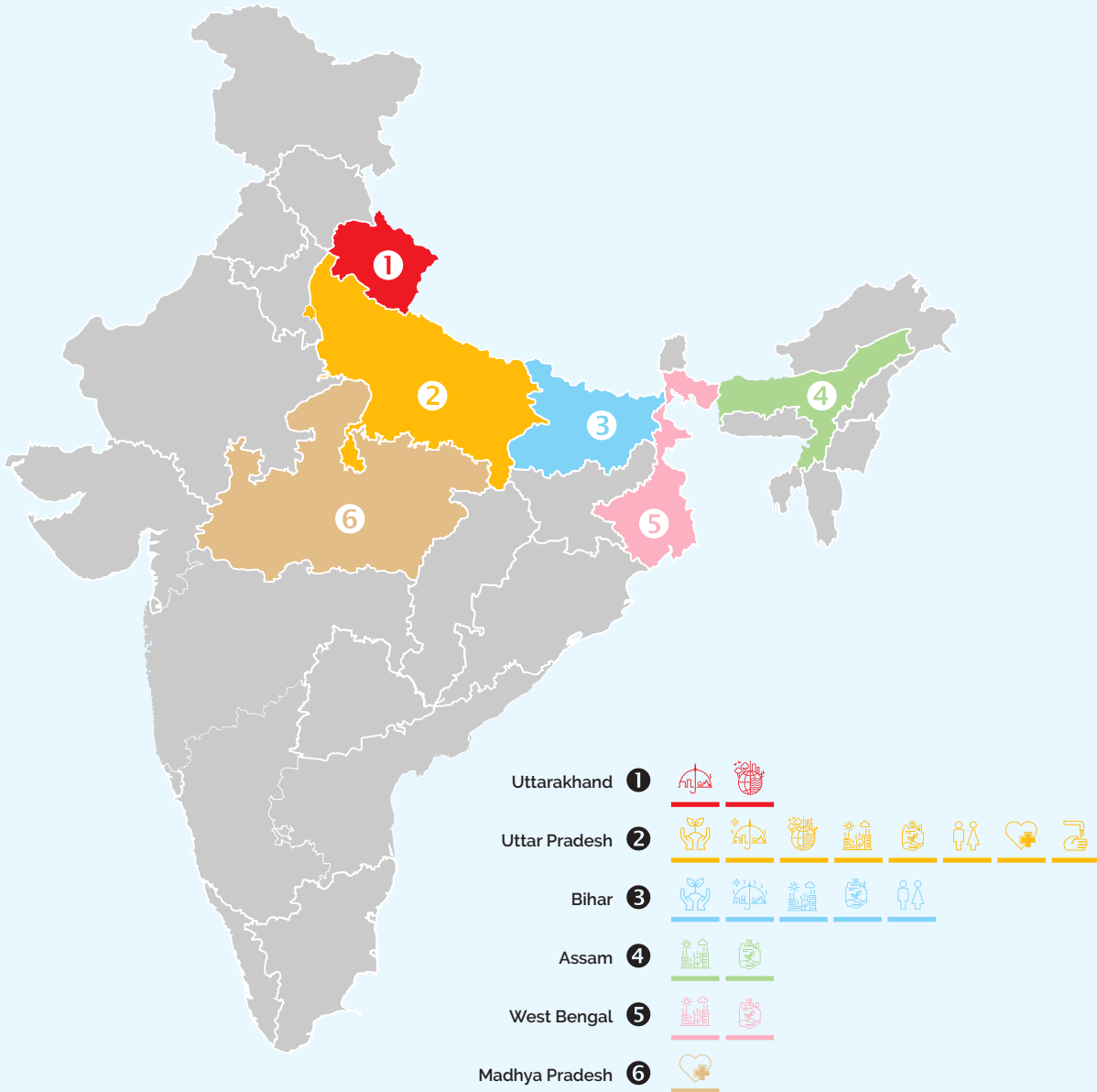
  
Urban Climate Change Resilience

  
Peri-urban Agriculture and Ecosystems

  
Gender

  
Health

  
Water, Sanitation and Hygiene







# Climate Change and Disaster Risk Resilience

GEAG has been working on addressing the interlinked challenges of disaster risk, sustainable development and climate change as a priority for some time now. It has actively pursued the integration of risk reduction and resilience building into all of its work be it agriculture, livelihoods or disaster management.

Disaster risk reduction concept entails systematic efforts that are required to analyse and reduce the causes behind the disasters. Reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and the environment, and improving preparedness and early warning systems for adverse events are all examples of disaster risk reduction.

GEAG believes that in order to attain sustainable development, it is imperative to have development policies that decrease disaster risks and disaster losses. GEAG has been channelling its efforts to strengthen disaster management capabilities across rural and urban India with the goal of better preparedness to minimise losses and reduce vulnerabilities to natural disasters that affect millions each year.

## The focus on children

Since climate change is known for its wide-ranging impacts on people, particularly children who are differentially vulnerable to its effects, the underlying factors and sub-factors from the ground that exacerbate children's vulnerability due to climate change were studied in-depth by GEAG for both the rural and urban context during the reporting year. Types of climate risks confronting children are diverse, ranging from direct physical impacts, such as cyclones, storm surges and extreme temperatures, to impacts on their health & sanitation, nutritional challenges, education and psychological stress. Even moderate climate change impacts can have profound long-term consequences on children's overall development, threatening the achievement of Sustainable Development

Goals. Natural disasters, induced by extreme climatic conditions have different impacts on children than on adults, and pose a serious threat to child survival and well-being. GEAG's emphasis was on early intervention to prevent irreversible harm to children at risk.

GEAG's studies indicate that the on-going disaster risk reduction efforts as well as most of the developmental interventions do not have clear child centricity leave alone avenues of child participation. Considering this, GEAG's focus was to strengthen capacities to support the integration of disaster reduction and climate change by assisting government and local NGOs in child focused disaster risk resilience in the context of climate change.



INTEGRATION OF CLIMATE CHANGE IN DISASTER RISK RESILIENCE INITIATIVES IN BIHAR WITH A FOCUS ON CHILDREN

As per Census, 2011, 50 million children in Bihar are vulnerable to varying level of climatic risks and disasters. Though Bihar has been a front-runner in disaster management, it is yet to get fully geared to combat impacts, withstand the risks, and equip itself to deal with uncertainties and associated environmental and social consequences. GEAG's thrust in 2017-18 was to strengthen the understanding of particular risks children face in specific contexts, and to build their resilience to the challenges of climate change and disasters.

Climate change and children: Specific challenges faced across agro-climatic zones in Bihar

GEAG with the support of UNICEF Bihar undertook a study to explore key challenges that relate to children and climate change in different agro-climatic regions of Bihar. In addition to synthesizing relevant secondary literature about impacts, vulnerability and adaptation, the study was complemented by primary data and information collected through a series of shared learning dialogues (SLD), community consultations, key informant interviews and focus group discussions, to unveil the underlying causes of vulnerability and needed advocacy on action points with key departments of the government and other stakeholders.

The study reveals the complexity, diversity as well as the serious condition of aspects related to child development under the impact of climatic risks and associated disasters in Bihar. In order to address this issue, a well thought out risk management and vulnerability reduction mechanism has to be planned and mainstreamed into the overall developmental process at local level, focusing on villages and urban areas. Needless to say children have to be involved at every stage wherever possible and every intervention has to be judged or evaluated in terms of its impact on children. Moreover, a child-centric household based approach is needed.

A study was undertaken on the integration of climate change into disaster risk reduction initiatives in Bihar with an emphasis on children focused on five major thematic strands of child's vulnerability in the backdrop of climatic risks and associated natural hazards: Health, Education, Nutrition, Water & Sanitation, and Child Protection. Policy Briefs were prepared to contextualize the lessons from the study on thematic strands, along with policy recommendations and/or action points.

Enhancing capacities of grassroots organisations in integration of climate change in disaster risk resilience initiatives

Effective resilience building requires that crucial agencies at the local level have the necessary skills and understanding on child focused climate change and disaster risk reduction. GEAG worked closely with UNICEF Bihar's six partner organisations on enhancing their capacities on integration of climate change in disaster risk reduction (DRR) initiatives with a focus on children. The organisations were involved in UNICEF's on-going climate based DRR and school safety initiatives in six districts of Bihar-Supaul, Madhubani, Darbhanga, Sitamarhi, Samastipur and East Champaran.

GEAG also engaged with support structures and institutions, especially communities, local and state governments, to minimise adverse impacts and reduce or mitigate the risks that directly affect children's lives. The work involved providing handholding support to districts in rollout of District Disaster Management Plan (DDMP) and in producing innovative and supportive knowledge materials on climate change. This was aimed to help improve development outcomes and reduce the risks posed by disasters and climate change.

From the outset, the primary focus of the model has been community mobilization, organization and capacity development to enable the community to undertake their own planning work for DRR. GEAG along with UNICEF's partners consistently provided support to communities to acquire necessary knowledge and skills to prepare the DRR plans. The process for planning, learning and action is built as a continuum in community and school, and the model has been configured in a manner that empowers the communities and strengthens their external linkages with duty bearers; and in the long-run contributes to community resilience.



Outputs

Policy Briefs

- Child Health Vulnerability in Bihar with Reference to Climatic Risks
- Vulnerability of Child Education with Reference to Climate Uncertainties in Bihar
- Nutritional Vulnerability of Rural Children under Climatic Risks in Bihar
- Water and Sanitation Vulnerability with Reference to Climatic Risks in Bihar
- Vulnerability of Child Protection under Climatic Uncertainties in Bihar

Community Based Disaster Risk Reduction (CBDRR) and School Safety Planning

- Model action plan developed for a village and a school on CBDRR and school safety
- 40 school children trained and nominated as climate change champions

Conduct 'Training of Trainers' on DRR

- Cadre of 30 DRR catalysts and master trainers trained on climate change adaptation

Outreach

- 10 blogs shared through social media platforms on issues affecting children in the context of climate change

Training Manuals

- Climate Sensitive School Safety Plan-Training Manual (Jalvayu Samvedi Vidyalay Suraksha Yojna- Hindi)
- Climate Resilient Community Based Disaster Risk Reduction- Training Manual (Jalvayu Samvedi Samuday Aadharit Aapda Jokhim Nyunikaran - Hindi)

School curriculum and supportive material prototypes reviewed and developed

- Review report of school curriculum of grades 6-8 of Bihar was prepared through a climate change lens and recommendations provided to incorporate information pertaining to climate change in school education to make children aware about climate change

Rolling out of DDMP process initiated in the district

- Developed detailed DDMP implementation plan
- Provided handholding support on Disaster Management (DM) to line department in the implementation of DDMPs
- Developed monitoring indicators for effective monitoring of DDMPs

Study Reports/Publications

- Climate Uncertainties and the State of Children in Bihar: A Status Report
- Children's Vulnerability in the Context of Climate Change Induced Disaster Risks in Bihar
- Human Interest Stories: Coping with the Deluge
- Climate change and rising temperatures (Jalvayu Badlav aur Badhti Garmi - Hindi)



# BUILDING CLIMATE CHANGE AND DISASTER RESILIENCE FOR URBAN CHILDREN

The disproportionate effects of climate change and disasters on children are not well-studied and understood in the urban space. The specific vulnerabilities and individual needs are largely neglected in the urban development plans, governance systems and municipal budgets. GEAG sought to understand and address their vulnerabilities and recognise children and youth as critical agents of change for a safer and sustainable world by enhancing their adaptive capacities.

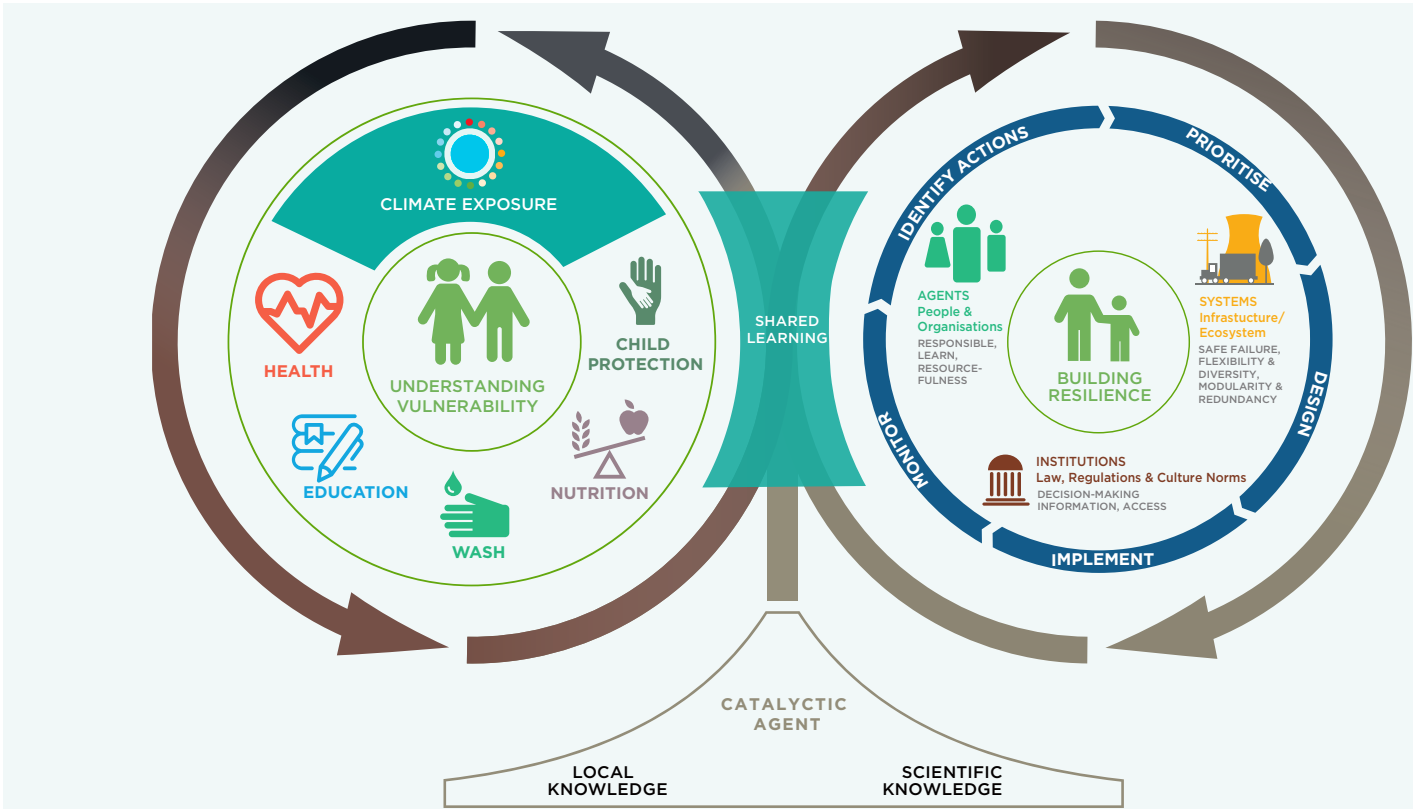
In an action-oriented new phase in the year 2017-18, GEAG with the support of UNICEF, India embarked upon an initiative on 'Building Climate Change and Disaster Resilience for Urban Children' in four cities (Bhopal, Patna, Udaipur and Visakhapatnam) to develop in-depth understanding of child-focused vulnerabilities in different geo-agro-climatic zones and identify resilience actions in collaboration with local governments. The initiative also linked climate sensitive urban planning through hands-on orientation of young urban planners in collaboration with students of School of Planning and Architecture (SPA), New Delhi on integrating components of urban climate change vulnerabilities and resilience in urban development planning processes.

A participatory multi-stakeholder and bottom-up approach was adopted in all the four cities to understand the vulnerabilities of urban poor children and identify resilience actions/directions. This included analysis of historic climate trends and future projections; multi-stakeholder participatory workshops; SLDs with urban local bodies, para-statal, state government, national government, civil society organizations and academicians; focus group discussions with communities (slums, low-income settlements, geographically vulnerable hotspots and informal settlements etc.); evolving 'Child-Centred Urban Climate Resilience Framework' and finally formulating Child-focussed City Resilience Action Strategies.

## Child-Centred Urban Climate Resilience Framework: Understanding vulnerabilities and developing resilience options

The Child-Centred Urban Climate Resilience Framework, adapted from the internationally acclaimed Climate Resilience Framework developed by ISET International, was evolved during the project process which is an integrated approach for understanding vulnerabilities of urban poor children, on one part, due to climate change impacts around their five key development parameters – Health, Education, Child Protection, Nutrition and Water, Sanitation and Hygiene (WASH). On the other hand, it focuses on the critical roles of Systems, Agents and Institutions across these five development parameters and the manner in which, with their resilient characteristics, they can contribute in building urban climate change resilience for children.

It also incorporates the concept of shared learning as part of an iterative process in which analysis feeds into planning, planning into actions, action into learning, learning into further cycles of analysis, and so on. This iterative, shared action-learning cycle fosters building and maintaining resilience over time,



*Adapted from Climate Resilience Framework, ISET International*

in the face of rapidly evolving contexts and high levels of uncertainty. This framework guides efforts to build urban resilience that support children, youth, girls and boys. It integrates child and human rights into resilient urban development, enabling children to become agents of resilience.

## Mainstreaming Resilient Development Planning in SPA's Course Curriculum

Cities are becoming the locus of increasing losses due to climate change impacts because of high concentration of population and large scale economic investments.

To facilitate this forward looking urban planning approach, GEAG in collaboration with the SPA, New Delhi undertook an intervention to integrate the agenda of urban climate change resilience and

child-friendly cities in their post-graduate studio programme. The studio programme emphasizes on training students with skills for analysing physical, social, cultural, economic and ecological dimensions of urban settlements, comprehending their problems, preparing strategies to address the issues and emerging challenges in a planned manner and working out implementation mechanisms.

This year the programme was conducted in three Andhra Pradesh cities: Vizianagaram, Srikakulam and Kakinada. This studio assignment was to develop an Outline Development Plan (a Master Plan) for the cities. Capacity building of post graduate students was done to take cognizance of climate change and child friendly aspects in urban planning process.





---

## STRENGTHENING STATE STRATEGIES FOR CLIMATE ACTIONS

While states have prepared their state action plans on climate change (SAPCC) outlining strategies and actions to mitigate and adapt to climate change, gaps remain in terms of operationalising implementation of these plans. Gaps also remain in integration of sectoral climate change considerations into most of the existing and future policies and programmes. This year, GEAG worked with the government of Uttarakhand to help prepare the Disaster Management Plan and Standard Operating Procedure (SOP) of ten government departments. Most of the sectoral departments needed support in terms of technical expertise, institutional capacities and prioritizing actions for effective implementation of the action plans.

---

To finalize the content for the departmental disaster management plan as well as the SOP, an inception meeting was organised with the State Disaster Management Department and the concerned state-level high officials (Director and Joint Director) of all the ten concerned departments (Animal Husbandry, Public Works, Drinking Water, Health, Power, Food Civil Supply and Consumer Affairs, Transport, Irrigation and Uttarakhand State Disaster Management Authority).

Nodal officers of various departments were contacted regarding the collection of data and information to prepare departmental disaster management scheme and SOPs. Disaster affected districts were identified by talking to the departments and the work of aggregating data and information was done by contacting the respective departments of the plain district of Haridwar and two hill districts of Pithoragarh and Rudrapur. Various documents were studied and based on the review, the SOP and departmental disaster management plan was prepared for the ten departments. A separate review meeting was organized with all departments regarding readymade documents and reviewed on the basis of received suggestions.

The SOP of five departments (PWD, Health, Power, Police and Drinking Water & Health Department) has been submitted by the Departmental Disaster Management Committee and submitted to the Uttarakhand State Disaster Management Authority. Departmental Disaster Management Plan by four departments (PWD, Health, Power and Drinking Water and Health) has also been submitted to the Departmental Disaster Management Committee. The project helped strengthen capacities of state nodal agencies on climate change, and oriented sectoral departments to plan and undertake specific interventions in climate-sensitive sectors that affect large sections of vulnerable communities in the state.







# Water Governance and River Basin Management

A thrust area for GEAG has been to understand how policies and practices at various levels in water resource management are more inclusive of community concerns. In 2017-18, GEAG worked on two initiatives on the broad theme of 'Water Governance and River Basin Management' with a view to enhance river basin communities' influence on water governance policies and processes. The first project on the West Rapti River Basin tried to work towards approaches and mechanisms wherein various civil society actors participate in or influence trans-boundary water governance and resolution of water conflict. The second project on Kosi sub-basin involved a political economy analysis to better comprehend the role of the different actors, the interests of these diverse groups and to bring about a dialogue seeking commonality for the sustainability of the basin.

GEAG in its work on river basin management has focused on preventing marginalization among vulnerable river basin communities through increased access to and control over riverine water resources on which their livelihoods depend.



ENHANCING CIVIL SOCIETY AND COMMUNITY-BASED ORGANISATIONS' ENGAGEMENT ON TRANS-BOUNDARY WATER ISSUES IN THE WEST RAPTI RIVER BASIN

Asymmetric water treaties between Nepal and India, and competition to safeguard national interest on issues such as hydropower, irrigation, flood control and other ecosystem services have engendered a climate of distrust in negotiating long-term water cooperation between India and Nepal. Despite growing interest and relevance of the issue in the public sphere, political sensitivities surrounding these issues have restricted adequate representation of public concerns in such deliberations.

Objective	The Asia Foundation supported project aims to enhance civic cooperation between cross-border actors on the West Rapti River Basin (WRRB) to support common understanding and action to better inform policy decisions on issues related to management of trans-boundary rivers.
Activities	<ul style="list-style-type: none"><li>Conducted a deep-dive analysis of the WRRB</li><li>Undertaken analytical documentation of engagements with local communities in the development of infrastructure projects in the WRRB</li><li>Established the West Rapti Working Group (WRWG) and enhanced its capacity to engage in trans-boundary water decision-making process</li><li>Organised a national dialogue on issues of trans-boundary water governance with special reference to marginalized river basins</li><li>Organised a <i>Pani Satsang</i> in Kathmandu, Nepal on trans-boundary water governance</li></ul>
Outcome/Impact	<ul style="list-style-type: none"><li>Developed knowledge base of indigenous civil society organisations to facilitate their collaboration in the sharing of knowledge, experience and best practices on trans-boundary water issues</li><li>Enhanced capacity of local communities living along the WRRB in Nepal and India to engage in trans-boundary water decision-making process</li></ul>



FRAGILITY, COMPLEXITY AND DEVELOPMENT: A POLITICAL ECONOMY ANALYSIS OF KOSI BASIN

Kosi sub-basin of the Ganges river has been in the spotlight for a variety of hydrological interventions on irrigation, flood control, up-stream hydropower development, livelihood programmes designed to generate incomes for riverine communities, navigational use, ecological restorations, and forest and wildlife conservation. This year, The Asia Foundation, a non-profit international development organization provided support to GEAG to conduct a political economy analysis of the Kosi sub-basin to better comprehend the role of the different actors, the interests of these diverse groups and to bring about a dialogue seeking commonality for the sustainability of the basin.

Objectives

- To map and categorise the completed, on-going and proposed interventions in the basin, including projects and programmes, hydro-engineering infrastructures, scientific studies and inquiries, completed and currently underway;
- To map the stakeholders at different scales in the basin, those related to the basin's resources and diverse interventions, and their political and economic interest at different scales (sub-basin, regional, national and trans-national) and intervention designs (flood control, irrigation, hydropower generation, infrastructure development, tourism, livelihood development and conservation & restoration of natural resources and biodiversity);
- To identify the influential actors and stakeholders at different scales in the basin and engage with them to bring them to a dialogue process towards their increased cooperation, co-production and contribution for sustainable development and use of riverine resources;
- To identify and ascertain the methods and processes that would be useful to mediate through diverse, also disparate, interests of stakeholders to build an environment of constructive engagement for water stewardship at different scales in the basin, including the one at trans-boundary scale;
- To propose broadly agreeable goals for sustainability of river ecology and water use through stakeholders' engagement and conversation.

As a part of this initiative, project planning meetings were conducted and literature review and data collection was done for the purpose of analysis. Inception meeting was organized with the partner organization to design the methodology and framework of the study. Meetings were held with the district administration and key departments to understand the political and economic interest on infrastructure development and the key challenges in the basin. A rapid round survey of the basin was conducted to understand the vulnerability of the region and mitigation measures taken by the administration to control the flood impacts. This was followed by data compilation, stakeholder analysis and development of case stories. GEAG also participated in a sharing workshop in Kathmandu, Nepal. The project culminated with the finalization of the 'Political Economy Analysis' report. The major outcome of the project was the development of this report.

It helped unpack the dynamic interaction among natural, social, political and economic systems between the two countries. It recommends that the key issues and challenges of the basin should be revisited from a climate change perspective. It suggests that without entering into the debate of revising the provisions of the treaty or benefit sharing, both the countries should focus on the management of infrastructures with little burden on local communities. Finally, it recommends the need to enhance capacities of society of both the countries to respond to constraints be it local or regional, short or long term, political, economic or technical.





# Peri-urban Ecosystems for Urban Resilience

Discourse on the impacts of climate change coupled with resilience studies and urban poverty studies indicate that peri-urban agriculture has a role to play based on experiences of contributing towards alleviation of poverty, but also in enhancing resilience in view of climate change risks. GEAG has been promoting resilient agriculture in peri-urban areas for over a decade. It has worked on designing and implementing site- and community specific adaptation strategies, including more bio-diverse and ecological methods with the aim to reduce vulnerabilities and increase the resilience of smallholder production systems to future climate shocks. The initiative, which started with thirty small and marginal 'model' farmers in peri-urban areas of Gorakhpur and showed that farming can give them resilient and profitable livelihoods has grown over time.

Broadly, GEAG's focus has been to assess the potential of peri-urban agriculture in enhancing food security. Its experience from pilot projects and research studies is that farming on the city's periphery or peri-urban areas can help boost the city's flood defences, support livelihoods and reduce migration and thereby enhance resilience to climate change.

Peri-urban areas are best understood as zones of interaction between the urban and periphery. Their governance and management is neglected by both urban and rural administrators. Peri-urban areas have become nobody's children, and thus no one bears responsibility for them.

GEAG has, with the support of the Asian Cities Climate Change Resilience Network (ACCCRN) and The Rockefeller Foundation engaged in policy-relevant and credible research to help address the significant knowledge gaps that exist in India around peri-urban agriculture's role in and contribution to food and livelihood security. Its work has demonstrated the importance of ecosystem services such as flood buffering for addressing climate change impacts in Gorakhpur city and elsewhere. To prevent the usurpation of peri-urban agricultural lands by the growing city, GEAG has over the years engaged in advocacy and educative efforts to put in place appropriate regulatory and incentive frameworks. The approach has been to enhance the city's flood buffering capacity as it expands, through the institutionalisation and replication of sustainable management of agricultural ecosystems based on low external input sustainable agriculture (LEISA) practices.



As a part of this, GEAG has been working on a series of interventions, and is a part of some studies, such as:

- *Developing methodologies for micro (ward level) planning of urban climate change resilience*
- *Helping marginalized farmers in peri-urban spaces to develop climate change-resilient farming and the conservation of open/ green areas and water bodies*
- *Organising citizens of Gorakhpur for the conservation of ecosystems, primarily water bodies*
- *Developing viable models of decentralised sewage management systems in two peri-urban locations of Gorakhpur*
- *Scaling the learning in three flood affected cities: Jorhat (Assam), Basirhat (West Bengal) and Saharsa (Bihar)*

In 2017-18, GEAG continued its work on demonstrating the importance of ecosystem services in addressing climate change impacts in Gorakhpur. It also worked on promoting a model of market access for the small and marginal farmers of peri-urban areas of Gorakhpur city. The underlying strategy is to make peri-urban farming economically viable among the farmers and demonstrate new techniques of farming which are climate-resilient.

## ENHANCING CLIMATE RESILIENCE OF GORAKHPUR CITY BY BUFFERING FLOODS THROUGH CLIMATE RESILIENT PERI-URBAN AGRICULTURE

Peri-urban areas and its ecosystems provide various services for dealing with climate change impacts. In the flood and waterlogging affected regions such as Gorakhpur, the role of peri-urban spaces is particularly vital. Peri-urban agriculture and ecosystems help in various ways. They provide a buffer space by allowing open lands to maintain their vital natural functions such as drainage and water infiltration into the soil leading to decreased runoff, thereby preventing floods and waterlogging in neighbouring constructed residential or commercial urban spaces. They keep areas vulnerable to floods free from development and construction and thereby prevent the creation of new flood zones upstream and downstream. They also help to diversify and enhance food and income sources of urban and peri-urban areas.

Enhancing and maintaining agriculture and ecosystems like water bodies, orchards, green areas in the peri-urban area surrounding Gorakhpur city is central to building the resilience to climate change for the entire urban area. In this project, which is a part of the ACCCRN and is funded by The Rockefeller Foundation, GEAG demonstrated the importance of ecosystem services in addressing climate change impacts in Gorakhpur.

Four interlinked objectives

- To develop models of climate-resilient integrated agriculture-horticulture-aquaculture-livestock systems in small, marginal landholdings in the peri-urban context, employing a diversity of water systems.
- To enhance the income and food security of the poor and vulnerable populations.
- To ensure the sustainability of peri-urban agricultural lands through different regulatory and incentive mechanisms.
- To enhance the flood buffering capacity of the city as it expands, through the institutionalization and replication of sustainable management of agricultural ecosystems.

## Research Studies

In order to build a critical mass of knowledge around peri-urban issues, research studies were undertaken in a few cities in India.

- **Peri-urbanity and the Smart City: Case Studies of Bhopal and Visakhapatnam, India:** The policy audit of two smart cities of India is based on secondary literature and field observations. It assesses the aspects of peri-urbanity in smart city proposals, city development plans and master plans and based on field observations in the two selected cities. The paper discusses key peri-urban issues and how they are treated, if at all, in the respective smart city proposals.
- **India's Peri-Urban Crisis: The Lack of an Ecosystems Approach:** The impact study of rampant urbanization in the two cities of Gorakhpur and Visakhapatnam, which leads to the phenomenon of peri-urbanisation is presented in the monograph.
- **Urban Resilience and Sustainability through Peri-Urban Ecosystems - Integrating Climate Change Adaptation and Disaster Risk Reduction: Process Guidance and Training Handbook:** This training manual, which is a handbook of practice guidance along with an implementation manual, has been developed for wider use and dissemination of the learnings from the pilot interventions in eastern India in the cities of Gorakhpur, Basirhat and Saharsa on ground issues pertaining to UCCR planning,

peri-urban agriculture and ecosystems for enhancing urban resilience and disaster risk reduction. It aims to utilize the lessons of these interventions and their mainstreaming into the policy planning and capacity building process of key stakeholders.

- **Designing a Functional Village-Scale Sanitation Ecosystem: The Lived Experiences in Two Villages of Gorakhpur, India:** Prepared under the aegis of ACCCRN, this paper is based on experiences related to interventions of GEAG in two selected peri-urban villages of Gorakhpur city on urban climate change resilience. It argues that a simple application of systems thinking will help to locate the part of the sanitation system.
- **Urbanisation and Sanitation Crisis in Urban Peripheries: A Case of Emerging Cities of Uttar Pradesh:** This research study looked at five cities (Allahabad, Gorakhpur, Lucknow, Jhansi and Saharanpur) from different agro-climatic zones of the state for field observation and to collect qualitative information on the issue of sanitation. Changes in surrounding areas of cities, key issues of natural resource, health, livelihood, land-use change and sanitation were the key guiding issues for this study. The study recommends the need for a fundamental change in approach among the planners and policy makers to prevent further land-use change and illegal construction activities.



Wider dissemination through social media

To reach out to a wider audience and share the knowledge generated through this project on a larger platform, GEAG has published blogs on peri-urban issues such as:

- Why Delhi Needs its Wetlands: The Okhla Bird Sanctuary
- The Plight of the Peri-Urban Space: 4 Cities Under the Lens
- Time to Mainstream ‘Ecosystem Based Urban Resilience’
- Why Cities Must be Peri-Urban Smart
- Struggling for Recognition: Peri-Urban Areas
- Conserving Peri-Urban Agriculture and Ecosystems to Build Urban Climate Change Resilience in Flood Affected Areas
- Frequently Asked Questions on Peri-Urban Areas
- Urban Sprawls and Frayed Ecosystems

Outcome and Impact

The research studies, conference, workshops and social media dissemination have developed an understanding that the peri-urban areas need immediate attention to make the process of urbanisation inclusive, resilient and sustainable. With this understanding and results, the project has paved a way for further multi-stakeholder engagement/dialogues for priority actions at policy, institutions and implementation level for conservation of peri-urban areas and the resulting contribution to resilient urbanisation.

The project has had a tangible and demonstrated impact on model and link farmers. The average agricultural income of model farmers has more than doubled due to reduced input costs, crop diversification, crop intensification, expansion of agricultural land under cultivation, reduced crop loss due to natural hazards such as floods and better market linkages.

Two model smallholder farmers trained by GEAG -- Chanda Devi and Asha Devi in village Semra Devi Prasad and Sanjhayi respectively have received the ‘Rani Laxmi Bai Veerta Puruskar’ from Hon’ble Chief Minister of Uttar Pradesh Shri Yogi Adityanath in March 2018. Adopting LEISA practices has benefited these model women farmers and they have in turn trained numerous other farmers in their village. Maintenance of their peri-urban agricultural lands also acts as buffer against floods in the city.

PROMOTING MODEL OF MARKET ACCESS FOR THE SMALL AND MARGINAL FARMERS OF PERI-URBAN AREAS OF GORAKHPUR CITY

GEAG has been working with small and marginal farmers to understand the various constraints faced by them which severely affect the productivity of their lands, and thereby their incomes. This project supported by NABARD, Uttar Pradesh tries to address the obstacles that cover the gamut of farming activities, from production to storage, and accessing markets to create a model of market access for small and marginal farmers of peri-urban areas of Gorakhpur.

Objectives

- Strengthening farmer capacity through best agricultural practices by enhancing agricultural productivity
- Ensuring access to and usage of quality input and services for intensive vegetable production and enhancing cluster competitiveness
- Developing the capacity of better agricultural practices in adverse climatic condition
- Facilitating access to actual market price for their produce and to build their capacity for marketing skills in the future
- Enhancing the processing and storage capability of agro-produce and value addition capacity for better income to small and marginal farmer

Activities

Two Farmer Producer Organisations (FPOs) have been formed in Gorakhpur, namely Surbhi Beej Producer Company in Singhorwa Bazaar, Jungle Kauria and Rapti Rohin Sabzi Producer Company in Semra Devi Prasad, Khorabar Block. These FPOs are registered under the Company Act and are operating smoothly.

Surbhi Beej Producer Company		Rapti Rohin Sabzi Producer Company	
Activity	Outcome	Activity	Outcome
Buyer-seller relationship/meeting	<ul style="list-style-type: none"><li>- Availability of DH-86 variety of peanut seed for 97 acres for 186 farmers of Jungle Kauria for the kharif season</li><li>- For the first time, 46 farmers sowed peanut seeds in summer season and earned an additional average of Rs. 2500 per farmer</li><li>- 17 farmers sold the DH-86 variety of peanut seed at Rs. 3000 per quintal to GDS and made an additional income of Rs. 51000</li></ul>	Prepare shareholder listings with crop details	<ul style="list-style-type: none"><li>- Baseline data collection related to 68 shareholders</li><li>- Developing an understanding of the need and capacity of the shareholder</li></ul>
Organising seed production process training	<ul style="list-style-type: none"><li>- 149 shareholder farmers obtained quality HD-2967 wheat seeds and sowed them on time</li><li>- Sowing in lines helped the farmers save input cost by Rs. 360 per acre</li><li>- 149 farmers produced an additional average of 1.80 quintals per farmer per acre</li><li>- 138 farmers collected the seeds produced by them for their own use</li></ul>	Buyer-seller relationship	<ul style="list-style-type: none"><li>- 5 female shareholders came forward for mass representation</li><li>- An agreement was reached between the seller and the shareholder wherein the seller will give 50 per cent of the income to the shareholder</li><li>- Collection and distribution from the fields of farmers producing vegetables at the local level</li></ul>
Prepare shareholder list with agricultural data	<ul style="list-style-type: none"><li>- Surbhi Beej Company listed individual data information for a total of 233 shareholders</li></ul>	Prepare annual progress report	<ul style="list-style-type: none"><li>- Presentation of the progress report has stirred confidence among the shareholder farmers towards FPO</li><li>- An understanding was developed on the shortcomings and challenges in increasing business</li></ul>
Preparing a yearly annual report	<ul style="list-style-type: none"><li>- Circulated annual progress report among shareholders</li><li>- Prepared business strategy for the next year</li></ul>	Storage of shareholder farmers’ products	<ul style="list-style-type: none"><li>- 68 farmers developed the capability to collect the extra produce from their guava farming to make jam-jelly and distribute it</li></ul>
Agricultural product storage and market linkage of farmers	<ul style="list-style-type: none"><li>- In Jungle Kauria, there was a sale of 97 quintals of seed from the village resource centre at the panchayat level</li><li>- An income of Rs. 40149 was earned from the sale of HD-2967 variety of wheat seed</li></ul>	Training of the company governing board	<ul style="list-style-type: none"><li>- 43 shareholder farmers developed an understanding of high value farming</li></ul>
		BIRD Company operation and distribution training	<ul style="list-style-type: none"><li>- 5 female farmers sold tomato seeds and earned an additional income of Rs. 4200</li></ul>
		Training of fruit-vegetable preservation and value addition	<ul style="list-style-type: none"><li>- Self-made quality vegetable, seeds were obtained</li></ul>





## Sustainable Livelihood Systems

GEAG has since its inception focussed on developing assets of the poor through improved livelihoods and enhanced rights to land and natural resources. The organisation has tried to merge local alternatives with scientific knowledge and has worked on environmentally and economically just alternatives, especially agro-ecological farming. The clear link between sustainable use of natural resources, including sustainable agriculture and climate change has been recognised in its various field initiatives as well as research and policy work. GEAG continues to work on reversing unsustainable farming practices, overexploitation of natural resources and inequitable access to resources. It works on proposing key policy solutions as well as on piloting projects to demonstrate that communities can adapt better.

In a country like India whose economy rests mainly on the primary production activities, GEAG recognises the need to work with the small and marginal farmers especially women who form the bulk of the farming community.

GEAG focuses on developing and promoting locally adapted farming systems, sustainable and ecological farming practices, conservation of ecosystem services and building community institutions to promote sustainable agriculture, which can ensure sustainable livelihoods to the marginalised people. GEAG is also actively involved in advocating for policy changes that promote sustainable agriculture.

Livelihoods in a changing environment experience varying degrees of vulnerability due to climatic, economic and other social factors. Most forms of primary livelihoods are dependent on local resources that are getting scarce by the day, and are under threat from variations in climate that manifest as extreme weather events. Rural livelihoods have been suffering because of agriculture becoming less remunerative which is enhancing the vulnerabilities of the poor in the volatile economic environment further exacerbated by climate related risks. GEAG believes that there is an urgent need to understand multi-dimensional – especially resource based – vulnerability, in order to develop bottom-up, climate adaptive livelihoods. GEAG's programmes thus focus on assessing climate related and other vulnerabilities that affect livelihoods in a village and guides activities that will be more resilient in the long-run thus contributing towards sustainable livelihoods.



As regards farm-based livelihoods, the thrust has not just been on improving smallholder's farm production, but on treating agriculture as multifunctional, which also provides environmental and social services. In 2017-18, GEAG worked on three projects under the broad theme of promoting sustainable livelihoods, which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contribute net benefits to other livelihoods. Specific issues addressed include hunger proofing, alternate livelihood options in villages near a tiger reserve and increasing incomes of forest dependent villages near a wildlife sanctuary through adoption of sustainable agriculture approaches like LEISA.



### BUILDING LIVELIHOOD RESILIENCE IN SMALL AND MARGINAL FARMERS TO COMBAT HUNGER IN MAHOBA

This programme supported by Indo Global Social Service Society (IGSSS) is premised on the concept of food sovereignty, which is the right of people to healthy and culturally-appropriate food produced using ecologically-sound and sustainable methods, and their right to define, access and control their own food and agriculture systems. It had the twin objectives to (a) Enhance the resilience capacity of the local community, and (b) For community based organizations, to adapt drought and hunger proofing measures.

#### Activities

**Capacity building of farmers on drought resilient agriculture practices:**

Trainings were organized for model farmers to orient and motivate them to resort to eco-friendly LEISA and bio-input oriented agriculture. The farmers were trained to prepare bio-compost, vermi-compost, green manure, bio-pesticides, scientific crops, crop rotation, and new techniques of irrigation, to make the agriculture climate resilient, less input oriented and more profitable. They were also encouraged to establish farmer field schools (FFS) to share their model experiences, to resolve their problems at local level and to invite experts to discuss better farming practices.

**FFS meeting and sessions:** Under this activity, FFS conveners organized farmers' sessions at their respective village each month. During the session, the facilitator focused on the importance and role of these types of institutions at community level. Farmer's problems were discussed in relation to climate change vis-a-vis livelihood issues.

**Disseminating climate information:** Climate information advisory has been providing a regular, tailored five-day forecast to farmers through village resource centres. Communication of the forecast is primarily through SMS, which is sent to the farmers whose mobile phone numbers are registered with the GEAG climatologist. This early warning system alerts the farmers to be prepared to deal with the climate change patterns in a better way. Farmers are using this information in their farm planning and other agricultural as well as household activities and have benefitted from the reduction in expenses on irrigation, pesticides etc., because of informed decisions.

#### Outcome/Impact

- ➔ Overall, the adaptive capacities of farmers has increased as they adopted resilient farming practices like crop diversity, mixed farming, optimum utilisation of local resources, and use of climate services
- ➔ The community led approach has led the farmers to demand government services. Thus, healthy linkages have been established between the community and government institutions
- ➔ The input cost in agriculture has reduced while the production level has been maintained
- ➔ Market dependency of farmers has decreased due to locally available quality seeds, local preparation of organic compost, green manuring and bio-pesticides

### SUSTAINABLE LIVELIHOOD INITIATIVES ON TERAJ ARC LANDSCAPE

The Terai Arc Landscape (TAL), spread across the states of Uttarakhand, Uttar Pradesh and Bihar, and the low lying hills of Nepal is an 810 km stretch that boasts of some of the most well-known tiger reserves and protected areas. GEAG has been providing support to World Wildlife Fund India (WWF-India) in designing sustainable livelihood initiatives in this landscape. The aim of the project is to ensure habitat integrity and connectivity across the landscape for key wildlife populations while providing alternate livelihood options for local communities within an enabling policy and institutional environment.

GEAG's project villages in this landscape are adjacent to the Valmiki tiger reserve (Bihar), Dudhwa national park (Uttar Pradesh) and tiger forest area (Pilibhit, Uttar Pradesh). The project is operative in ten villages of the Valmiki tiger reserve in Bihar and thirty villages of Katarniyaghat, Pilibhit tiger reserve and Dudhwa tiger reserve in Uttar Pradesh. The objectives of the project are to assess the village-wise alternative livelihood options in the identified villages and implement the identified alternative livelihood activities especially those that are farm-based. GEAG also provides technical support where required and builds capacities of the WWF team in design and implementation of livelihood initiatives in the TAL.

In Valmiki tiger reserve, Bihar and Pilibhit tiger reserve, Uttar Pradesh survey was conducted in 10 villages each and model farmers were selected. The

farmers here earn a substantial income through the farming of vegetables in the four existing poly-houses. These are low-cost and made from local resources like bamboo. The vegetables grown here are protected from the adverse impacts of climate change. Under this, a total of 35 farmers were encouraged to take up mushroom farming and enhance their incomes by selling the mushroom in the local market. The survey in the Dudhwa tiger reserve, Uttar Pradesh project area is on-going.

In addition to these activities, GEAG also engaged with agriculture-related schemes in the intervention area. Demonstrations were conducted during the *kharif* and *rabi* season. Cattle were vaccinated free of cost. A number of farmers also benefitted from the National Rural Livelihood Mission wherein they took up livelihood activities such as goat rearing and poultry.

### INTEGRATING CONSERVATION AND SUSTAINABLE LIVELIHOOD OF MARGINALIZED COMMUNITIES USING APPROPRIATE TECHNIQUES

Valmiki wildlife sanctuary, located in the northern stretch of West Champaran district, Bihar, is one of the 18 tiger reserve sanctuaries in India. Prior to 1978, when this forest was not notified as a wildlife sanctuary, the communities, primarily the Tharus, a scheduled tribe, the dominant community in the landscape along with others like Mushar and Beend from dozens of nearby villages were dependent on the tiger reserve for their livelihoods. The area had come under increasing pressure due to the rapid growth of human population and large-scale land conversion over the past few decades. With large areas under agriculture, the landscape has fragmented forest patches embedded in an agricultural landscape. The area also witnesses human-wildlife conflict frequently.

GEAG's project in the area with the support of Department of Science and Technology, Government of India aims to demonstrate innovative approaches and mechanisms based on appropriate technical inputs with a synergy of technical knowhow and indigenous knowledge, linked to local resources. The key objectives of this endeavour are (a) Increase the income of the people by using the principle of LEISA (b) Reduce the dependence of households on collection of wood from the forests and (c) Formation of FFS, agriculture service centre and self-help group at the village level to strengthen the communities.

In 2017-18, GEAG initiated proper strategies and programmes to reduce the pressure on the forest. Improving the livelihood systems of the people in the 26 revenue villages inside the Valmiki tiger reserve as well as in nearby villages has been the key strategy to ease pressure on the tiger reserve including in the core area. Farm related intervention under the project focused on changing the agricultural system while at the same time stressed on diversity in farming instead of cultivating single crop of paddy, sugarcane and wheat. By incorporating many crops, farmers were assured of profits even if a crop failed. This led to stability in farmers' income.



Crop mix season-wise			
Year	<i>Kharif</i>	<i>Rabi</i>	<i>Zayad</i>
2013-14	Paddy	Sugarcane, Wheat	Sugarcane
2017-18	Paddy, Banana+ <i>Lobia, Chari</i>	Potato+Radish, Coriander, Garlic, Onion, Wheat, Peas, Mustard, Turnip, Cauliflower, Brinjal, Chilli and <i>Berseem</i>	Gourd, Bitter Gourd, Tomato, <i>Chari</i> , Ladyfinger and Brinjal

The project also worked on extension activities to ensure that LEISA based agricultural practices help in reducing input costs, while boosting the net gains. This has generated hope in farming and seeing visible changes, other farmers of five villages began adopting these. Their numbers shot from 25 model farmers to 317 more farmers who started attending the FFS. To reduce reliance on external costs through recycling, the project focused on encouraging farmers to use organic fertilizers and pesticides prepared with crop residues and local resources.

### Outcome

Notable changes were observed in the farming practices of the communities living near the Valmiki wildlife sanctuary as presented in the table. Farmers earned more by changing and diversifying the farming system. Compared to 2013-14, the variety of crops and area diversified by farmers has doubled in 2017-18.

After adopting diversification within the farm, there was a clear difference in the cost and benefits of farmers, as is evident from the table.

- Incomes of farmers have improved due to adoption of integrated farming systems approach that combines farming with horticulture, animal husbandry etc.
- Fields are being cultivated the year round leading to an increase in crop intensity of 300 percent in the year 2017-18 as compared to that in 2013-14.
- The project period saw the installation of 662 units of vermicompost, vermiwash, NADEP compost, matka manure, matka pesticides, trichoderma etc. Results from analysing the adopted LEISA technique show that the external input costs have come down.
- The dependencies of families living near the forest for fuel remain mostly on the forest, because they easily obtain timber from the woods. Bringing fuel from the forest is mostly the responsibility of women. For this task, women spend up to four to five hours per day.

Description	Year		Change (in %)
	2013-14	2017-18	
Crops (Species)	11	22	100
Animal Husbandry (Species)	01	02	100
Manure Making (Types)	01	03	200
Multi-year Plants (Species)	04	05	25
Horticulture (Species)	02	06	200
Total	19	38	100

Year	Cost (per acre)	Production (per acre/ INR)	Benefit (per acre/ INR)	Cost- Benefit Ratio
2013-14	32,920.00	51,000.00	18,080.00	1:0.55
2017-18	25,575.00	70,0000.00	44,425.00	1:1.74

Analysis of project data of 125 families indicates the following changes in fuel consumption:

Consumption of fuel per family per day of using fuel through the traditional method (average)	Consumption of fuel per family per day of using fuel through the advanced/improved method (average)	Reduction in the consumption of fuel per family per day (average)
11.8 kg	2.8 kg	9.00 kg

### GEAG recognised as Core Support Organisation

In the reporting year, the Department of Science and Technology, Ministry of Science and Technology, Government of India accredited GEAG as their Core Support Partner through a selection mechanism involving on-the-spot assessments, field visits by experts, etc. This selection was made owing to GEAG's scientific and technical expertise in the areas of resilient agriculture and livelihoods for the poor and marginalised rural communities which will further help the organisation in working as a facilitating organisation in northern India and developing as a Centre of Excellence for rural development. GEAG will aim at developing replicable technological innovations with backward and forward linkages to benefit and empower local people through a participatory and bottom-up approach.







## Gender and Agriculture

Promoting gender equality and social inclusion within development is integral to achieving significant and sustainable advancements in agriculture, health, climate resilience, disaster management, governance etc. And GEAG is committed to achieving these goals in each of its projects. GEAG has significant experience and expertise in the implementation of gender and social inclusion considerations as cross-cutting issues within development programmes.

Gender and social inclusion has been at the centre of all activities that GEAG undertakes in rural and urban spaces. GEAG's field-level interventions have strengthened the struggles of poor women and men against poverty and discrimination based on gender and caste.

GEAG implements its projects with several key strategies related to gender parity. These are economic empowerment and capacity building of women, particularly in the areas of entrepreneurship and access to credit; advocacy for the rights and interests of small marginal woman farmers; and gender- and child-sensitive development planning.

GEAG has been taking on deeply entrenched gender biases, and working with people to transform the way they think about gender equality. It has been encouraging women to take on leadership roles as farmers, cultivators, livestock holders and have a voice at the village level. It has successfully created a pool of change agents by cultivating leadership qualities among women. Its initiatives have focussed on women farmers and have empowered them with better knowledge, better agency, realisation of better value for their produce and better control of their lives.



Women farmers play an important role in agriculture in rural India, and as high as 84 percent of women depend on it for their livelihood. Women make up about 33 percent of cultivators and about 47 percent of agricultural labourers.<sup>1</sup> These statistics do not account for work in livestock, fisheries and various other ancillary forms of food production in the country.

Women play an important role in the global rice sector as both paid and unpaid family labour. In

1 Rao, E. Krishna (2006). "Role of Women in Agriculture:

many parts of Asia, women contribute at least half of the total labour input in rice production, performing backbreaking tasks such as transplanting and weeding. After harvest, it is usually the women who take care of seed storage and processing of rice (drying, milling) for home consumption. Yet, these women face many constraints because of the prevalence of gender stereotypes and social restrictions that hamper their access to technical knowledge and technologies.

## GENDERED VARIETAL TRIALS AND PARTICIPATORY EVALUATION AND LEARNING

GEAG collaborated with the International Rice Research Institute (IRRI) in the year 2017-18 on gendered varietal trials and participatory evaluation and learning. The project acknowledges that increased participation of women in agricultural research for development and extension will accelerate the realization of development goals, such as reducing poverty and increasing food security. IRRI is working with women to empower them and strengthen their role in the design, experimentation, and evaluation of agricultural research for development, as well as improved access to resources and control over output. The specific role of women in farming varies widely depending upon ecological, economic, sociological and religious factors. Rural women are often thought of as a homogeneous group but it is important to recognize women from different socio-economic strata as they have different interests and problems.

Uttar Pradesh is the second largest producer of rice in the country in terms of its area and production. The leading rice producing areas in the state are concentrated in Northern Terai and Trans Saryu (Saryu *par*) region, which includes eleven districts of three divisions of north east Uttar Pradesh, which come under 100 leading rice producing districts of the country and all together contribute around 32 percent of the state's rice production and about 7 percent of the country's rice production.

Gorakhpur lies in the leading rice producing region of Trans-Saryu plain. It is a leading rice producer due to its geographical condition of fertile monotonous plain surface with deep fertile clayey and loamy alluvial soil of river's flood plain, humid tropic climate with sufficient rainfall during monsoon season, abundant supply of cheap labour and assured irrigation by canal and tubewell tapping the groundwater.

### Objectives

- To monitor performance of the released as well as promising varieties of paddy in farmer's field.
- To allow farmers to select the best varieties under their own management practices.
- To obtain the feedback from the farmers about the test entries.
- To create a platform for self-learning, participatory evaluation and build capacities of women and men on decision making around varietal selection.
- To serve as a source of appropriate and good seed for use by farmers in respect to climate induced disaster risks.

### Activities

**Cluster Trial:** This method was adopted with ten women self-help groups (WSHG) in ten different villages. 13 seed varieties were given to farmers who were asked to make 13 plots of 2X2 m plots enclosed with levees to prevent contamination from adjacent plots.

**Individual Trial (Head-to-Head Trial):** Under this type of trial, farmers of all 20 villages (100 women from 10 different villages, 5 women SHGs members and 5 non-SHG members from each village, total 100 women farmers) and likewise 10 men (from each village total 100 male farmers); total 200 farmers were selected to complete the trial process on their own field by growing any one variety by two farmers (pair farmers) from 5 selected varieties-Sahbhagi, DRR-44, DRR-46, Bina-11, Shusk Samarat - with their own level of inputs and management. The cropping process remained the same as followed by farmers during previous years but it was necessary that the crop management practices vary over locations. The management practices right from seed sowing to harvesting were to be the same for both the farmers (pair). A total of 257 farmers were selected from the village clusters, 132 for cluster trial and 125 for Head-to-Head trial.

**Training of Farmers at Farmers' Field School:**

A training camp was organised at the FFS, Singhorwa village cluster by Central Integrated Pest Management Centre. All project farmers from both clusters attended. They were provided technical knowledge on rice plant protection and orientation on identification of rice pest and diseases.

**Exposure visit of farmers:** Farmers visited and heard deliberations/speeches/lectures of scientists at a *Kisan Mela* organised by the Agriculture Department. GEAG had also set up a stall at the *Mela*. Besides this, visits of officers of Agriculture Department and scientists of *Krishi Vigyan Kendra* were held to the cluster. Individual trials were conducted in the villages to get information on germination, growth, incidence of pests and diseases etc.

**Collection of Data and Shared Experiences:** A severe flood during the *kharif* season in 2017 affected the project area as it damaged the rice crop of most of the farmers. The farmers shared their experiences of the ordeal and based on these experiences, inferences were drawn.

### Outcome/Impact

- Women farmers made a significant contribution at every stage of rice cultivation and should therefore be included for capacity building and varietal trials.
- Since the women farmers actively participated in all the planned activities in participatory varietal selection (PVS) trials, it is likely that their attitude will change and they will initiate adoption of new technologies developed for stress-prone rice growing areas.

This has helped the farming communities become more robust and flood-resilient by minimising the chances of losses. Also, increasing diversity in agriculture means increasing the number of elements performing a function. Beyond the crops, this can include sub-systems in the farm such as aquaculture ponds, orchards/ kitchen gardens, livestock and poultry. Each of these elements can perform multiple functions, enhancing complexity and providing flexibility to the overall farm system.

The farmers have also adopted recycling processes in farm sub-systems, reducing the need for external inputs. Farmers use a range of practices including reducing external bio-inputs, growing appropriate crop varieties, employing space and time management, seed banking, land shaping and potable nursery systems.

Text message-based weather warnings sent by GEAG help the farmers to take appropriate decisions. In response to the geographical conditions of the area and frequent flood events, farmers have adopted innovative farming practices to sustain their livelihoods.





## Health and Nutrition

Health, nutrition and sanitation are closely interlinked and are major determinants impacting quality of life. Access to quality and affordable health care and balanced diet continues to be a challenge for the poor and disadvantaged, especially for women and children. GEAG has been working with various developmental partners on health and nutrition related aspects, the focus being mainly on preventive and ecological health. In the flood affected areas of Gorakhpur and adjoining districts, GEAG has undertaken various initiatives to promote community health and nutrition with a focus on the underprivileged and vulnerable sections.

Last year, GEAG collaborated with various agencies like Catholic Relief Services and Nutrition International on issues of maternal & child health and nutrition and provided technical support to various state governments on child nutrition-related programmes. GEAG has been providing technical assistance to the state government of Uttar Pradesh as well as Madhya Pradesh for effective implementation of nutrition programmes in 253 blocks of 20 districts of Uttar Pradesh and 122 blocks of 20 districts of Madhya Pradesh respectively. GEAG collaborated with Nutrition International, India to focus on the priority of saving lives and improving the health of children and adolescents. GEAG also worked on planning and implementation of supplemental polio immunization last year.



TECHNICAL AND IMPLEMENTATION SUPPORT TO VITAMIN A, ZINC, ORS AND ADOLESCENT NUTRITION PROGRAMME IN UTTAR PRADESH

Nutrition International, in partnership with GEAG, is providing technical support to the Government of Uttar Pradesh to implement vitamin A, iron and folic acid (IFA) and diarrhoea management programme in 253 blocks of 20 districts. The objectives are three-fold: (a) Ensure timely micronutrients supply for under-5 year old children and adolescent girls (b) Increase in coverage area, and (c) Quality service delivery to the beneficiaries.

The work entailed administration of vitamin A syrup to all children under-5 through routine immunization (RI) campaigns and biannual rounds. It also involved expanding zinc supplementation in the project area, along with oral rehydration salts, for the treatment of childhood diarrhoea in priority states. Expanding IFA programmes for preschool children, adolescent girls, pregnant and lactating women was a focus.

An important activity in the project was the timely and adequate procurement and distribution of vitamin A/ IFA tablets and Zinc/Oral rehydration solution (ORS). Other activities were planning, execution and review of strategies to ensure maximum coverage, data maintenance and timely reporting, coordination and convergence among various departments, capacity building and monitoring & handholding.

The programme impact was founded on two broad interventions:

Under-5 nutrition intervention (Vitamin A supplementation & Zinc/ORS)

- Improved coverage of vitamin A in the project's intervention districts and blocks:** In comparison with the baseline of June 2016, the intervention has achieved remarkable increase in the coverage of vitamin A in December and June 2017 rounds at the district as well as the block level.
- Improved procurement and timely distribution:** Supply plays an important role in coverage improvement. The project ensured 100 percent supply of vitamin A in the districts after working intensively with the department and consequently observed significant improvement in coverage from the December 2017 *Bal Swasthya Poshan Mah* (BSPM) round.
- Improved monitoring and quick corrective measures:** In Nutrition International's intervention districts, BSPM session's monitoring visits of government officials of health and Integrated Child Development Services (ICDS) have been streamlined. As compared to the 2758 sessions monitored in rest of the state, departments have been able to monitor 6029 BSPM sessions.
- Improved data recording and reporting:** BSPM district level report has multilateral data feedings starting from Auxiliary Nurse Midwife (ANM) to block level and then compilation at district level. In validation findings, data discrepancy has come down by five percent at block level and two percent at the sub-centre level in GEAG's seven old intervention districts.



Adolescent nutrition intervention - WIFS Programme

According to the World Health Organization, weekly iron and folic acid supplements (WIFS) should be viewed as a key intervention to prevent anaemia. The Ministry of Health and Family Welfare launched the WIFS programme in 2012 to meet the challenge of the high prevalence and incidence of anaemia in adolescent girls and boys (56 percent of girls and 30 percent of boys). WIFS is an evidence-based response to the prevailing anaemia situation and includes weekly supervised ingestion of IFA supplementation and bi-annual helminthic control.

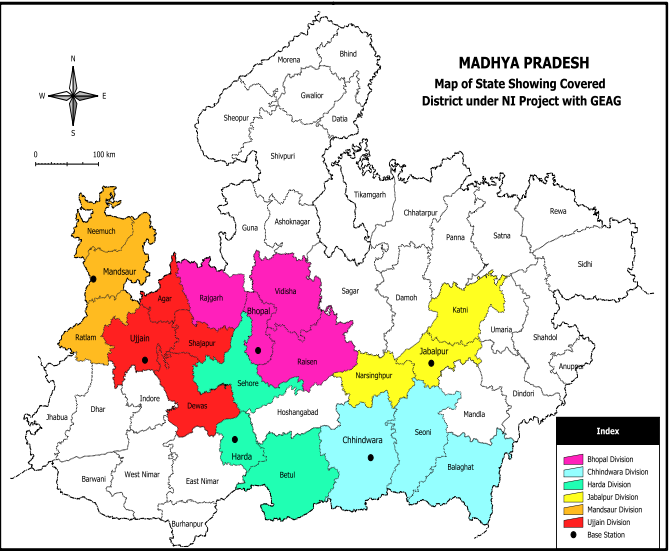
These interventions are complemented by a comprehensive communication programme to raise awareness and improve anaemia knowledge. The programme's long-term goal is to break the intergenerational cycle of anaemia; while in the short term, it improves human capital through improved nutrition status. The programme is implemented in every state in the country, in both rural and urban areas. GEAG collaborated with Nutrition International in implementation of this programme in Uttar Pradesh.

Outcome/Impact

- Increase in coverage:** Total coverage has improved and 43 percent of beneficiaries have access to IFA now. In school-going adolescent girls, 58 percent are getting IFA tablets whereas it is quite low among non-school going girls.
- Procurement and distribution improvement:** Unavailability of IFA tablets was observed as a major shortcoming at the beginning of the programme. After assessment of the stock availability, GEAG strived to ensure timely procurement of IFA blue tablets in respective districts. After release of the fund in October, purchase order was released in the same month and IFA tablets were procured by the department within three months as per requirement in the 20 intervention districts.
- Improved data recording and reporting:** Intensive hand holding, coordination meetings with departments, making formats available in the schools and consistent follow up at district level brought significant improvement and blocks started getting reports in a timely manner.

ROLL OUT OF VITAMIN A, ADOLESCENT & MATERNAL HEALTH PROGRAMME IN MADHYA PRADESH

GEAG in partnership with Nutrition International is implementing under-5 children and adolescent nutrition programme in 122 blocks of 20 districts from 4 divisions, namely Bhopal, Ujjain, Narmadapuram and Jabalpur. Maternal Health Programme is also being implemented by GEAG in 34 blocks of 6 districts. The initiative is being implemented in collaboration with the Department of Health and Family Welfare, Department of Education, Department of Women and Child Development, and Tribal Welfare to ensure effective and timely implementation of the programme.





It aims to (a) reduce mortality among children under 5, (b) increase the coverage and consumption of IFA tablets and improve behavioural changes like dietary practices among adolescent girls (10-19 yrs) in the state and (c) improve coverage and consumption of IFA and calcium supplementation, and promote nutrition counselling to reduce anaemia among pregnant and lactating women.

Activities

- Integration of budget of DASTAK in district budget and its proper utilization
- Improved planning & monitoring
- Capacity building of district & sub-district officials on monitoring, orientation on MAA

- campaign and training on estimation and calculation of MN supply
- On job capacity building of FLWs on counselling of caregivers and use of IEC materials
- Support in Planning, Coordination & Review
- Develop official's capacity to calculate, demand, procure & distribute supplies
- Develop capacity of school teachers, district and block level officials on counselling and Behaviour Change Communication
- Develop capacity of officials on monitoring & reporting and supplies

Key achievements of the programme		
Vitamin A Supplementation (Dastak)	Adolescent Nutrition Programme(WIFS)	Maternal Nutrition Programme(Iron & Calcium)
<div><ul style="list-style-type: none"><li>- Stock analysis and need assessment of vitamin A in all 20 districts</li><li>- Dastak monitoring (187 sessions)</li><li>- Training &amp; other support</li><li>- Mid-term review in all 20 districts</li><li>- Innovation in Agar district - Allotted one block to every district official, who was made in-charge of the Dastak Abhiyan</li><li>- Special focus on low coverage area</li></ul></div>	<div><ul style="list-style-type: none"><li>- 6469 FLWs trained in 20 districts on National Iron Plus Initiative (NIPI)/WIFS in the first 6 months</li><li>- 376 school teachers oriented on reporting, calculation of stock and AEFI management under NIPI, anaemia and iron rich food</li><li>- Facilitated divisional level ToT in Bhopal and Ujjain division and oriented 221 districts and block level officials on Lalima programme, anaemia and iron rich food</li><li>- Regular reporting by 20 districts to the state through the online HMIS</li><li>- 8418 school going adolescent girl's provided orientation on anaemia, IFA supplementation and iron rich food</li><li>- Organized Lalima day celebration in all 20 districts, and oriented 1325 adolescent girls on health, personal hygiene, cause of anaemia and iron rich dietary sources</li><li>- Nutrition Literacy Workshop</li><li>- Activation of District Coordination Committee in all 20 districts and facilitated 36 meetings so far</li><li>- Advocacy at Division Level which led to the Divisional Commissioner Ujjain to issue instructions to all the Collectors to monitor NIPI and Lalima programme on a regular basis</li></ul></div>	<div><ul style="list-style-type: none"><li>- Regular monitoring of Pradhan Mantri Surakshit Matrituv Abhiyan</li><li>- Increased availability of IFA-Red (83 percent session sites) and Calcium (90 percent VHND session sites)</li><li>- Provided successful training to 6469 frontline workers in 20 districts on IFA Red and Calcium supplementation program</li><li>- 4 district level workshops on 'World Breastfeeding Week' in Bhopal, Chhindwara, Harda and Jabalpur districts, where 109 ICDS officials were provided orientation</li><li>- JD-ICDS, Ujjain has shared IFA Red and Calcium coverage in collector's conference for better coverage of IFA and calcium</li></ul></div>

## STRENGTHEN NATIONAL AND REGIONAL IMMUNIZATION SYSTEMS TO ACHIEVE POLIO ERADICATION

India is faced with unique challenges in eradicating polio. Among them are high population density and birth rate, poor sanitation, widespread diarrhoea, inaccessible terrain and reluctance of a section of the population in certain pockets, to accept the polio vaccine. Last year Catholic Relief Services and GEAG worked on strategies to make polio vaccination more acceptable among people who had been resisting it. The programme is operative in the Mau and Sitapur districts of Uttar Pradesh.

### Key objectives

- Build effective partnership between private voluntary organizations (PVOs), NGOs and international, national and regional organizations involved in polio eradication
- Strengthen national and regional immunization system
- Support NGO involvement in national and regional planning as well as in implementation of supplementary immunization activity (SIA)
- Support PVO/NGO efforts to strengthen acute flaccid paralysis (AFP) case detection and reporting
- Improve the quality of polio eradication and health related activities

### Activities

The project tried to improve the coordination between frontline workers like ASHA, ANM, AWW and CMC for improving the vaccination coverage during routine immunization and supplemental polio immunization in their respective area. A meeting was held for this and was very effective for developing coordination between frontline functionaries for support in social mobilization for mother and child care. This provided support during immunization session, polio rounds, mothers meeting and house-to-house visit of target families.

The project had a component – Barbers' Initiative, which involved the orientation of barbers so their engagement ensures greater involvement of men in the immunization process and motivates their family members for timely immunization by bringing children to the immunization sessions (polio & routine immunization). This activity has increased the involvement of men and reduced cases of refusal to polio vaccine and immunization.

Village Health Sanitation & Nutrition Committee meetings are conducted every quarter to orient the members on immunization. It ensures responsibilities for polio and resistant families towards mobilization. This is a very useful activity to

promote sanitation behaviours in community. Based on this activity, increased toilet construction and use was reported in the project area.

Influencers' meeting was held to engage them in motivating the communities to improve the coverage of SIA and RI vaccination. This platform also provides opportunity to engage influencers in improving the reporting of AFP cases from the CMC area.

20 interpersonal communication sessions were held with caretakers (0-5 years old children & pregnant mothers) for childhood immunization. They were motivated to adopt positive behaviour for polio, routine immunization vaccination, early & exclusive breastfeeding, diarrhoea prevention, management and hygiene. This activity helps to increase institutional delivery and immunization.

Group meetings were conducted with parents, community, adolescent children etc., once or twice a month to enable participants to adopt positive behaviour on immunization, breastfeeding and diarrhoea prevention, management and hygiene. This is very useful to create a positive environment for mothers and for child care.

### Outcome/Impact

- Increase in routine immunization coverage and booth coverage
- Quality of mothers' meetings improved over the period
- Routine immunization became the government's priority and additional routine immunization camps were organized in the project area
- Reduction in families who were openly resistant and refused the vaccine through health camps, engaging National Integrated Medical Association (NIMA) and Combined Medical Practitioner's Association (CMPA) and mapping of such families
- Decrease in number of missed houses and missed children





# Sanitation

India has the most number of people in the world defecating in the open. It has a burgeoning crisis of untreated faecal waste that is contaminating surfaces and groundwater and is creating an imminent health crisis. GEAG has been working with the government on providing universal access to toilets (at household, school, and public places) for sanitation and on stopping open defecation as an urgent community-wide action. It recognises that for improving toilet use, hygiene behaviour change is essential. For the last four years, GEAG has been working as a research and implementation agency in the area of sanitation.

GEAG considers sanitation as a total package consisting of safe handling of drinking water, disposal of wastewater through proper drains, safe disposal of human excreta, solid waste management, personal hygiene, handwashing and overall village sanitation in catalysing holistic development.

GEAG worked on a range of interventions last year to facilitate demand generation, on improving sanitation coverage as well as social behaviour change communication (SBCC). It worked on a project to promote the safe management of wastes. The project on decentralized wastewater treatment systems (DEWATS) in Gorakhpur tried to make a substantial and sustainable impact on public health. GEAG worked on a research study 'Sanitation Crisis in City's Periphery of Secondary Cities in Uttar Pradesh' conducted in the five cities (Allahabad, Gorakhpur, Lucknow, Jhansi and Saharanpur) from different agro-climatic zones of the state. GEAG is also empanelled as a Key Resource Centre (KRC) for trainings of different levels by the Ministry of Drinking Water and Sanitation, Government of India.



## PROMOTING AND DEEPENING URBAN CLIMATE RESILIENCE THROUGH DECENTRALIZED WASTEWATER TREATMENT IN GORAKHPUR

GEAG undertook a project on DEWATS to protect and promote human health by providing a clean environment and to break the cycle of disease. A bottom-up approach was adopted for the community intervention and the project commenced with a problem assessment by the community. The community felt that the acute problem of waterlogging on the streets of the two villages selected for the project was due to the absence of a proper drainage system in the area. The problem of open defecation had also come up during the shared learning dialogues. After the construction of DEWATS, open defecation related activities were implemented under the programme.

To make the village open defecation free and to ensure total sanitation, some indicators were developed and the village level sanitation staff was trained in community led total sanitation (CLTS) process. CLTS is essentially a low-cost and high impact participatory community led tool as well as a widely used methodology for mobilizing communities to completely eliminate open defecation. Communities are facilitated to conduct appraisal of their sanitation practices and start collective action to become totally open defecation free.

A baseline survey was conducted on the issue of availability of toilets, its number and use and other components of sanitation, disposal of sewage, source of water and per capita use, etc. The data collected was processed and analysed and this became the roadmap for the future course of action.

To encourage and scale-up toilet construction, it was crucial for the community to have full knowledge of the cost, the technical knowhow and techniques of its construction. A meeting in this regard was arranged in which members of the monitoring committee, masons and other villagers participated. In order to make the local public aware about personal hygiene and sanitation, water samples (25 from each village) of drinking water were collected from the hand pumps (shallow hand pumps and India-mark II) of both the project villages. The samples were tested to know the presence/absence of E. coli bacteria. H<sub>2</sub>S vials were used for this purpose. After the water testing, three households decided to install new hand-pumps and many community members started using the water from that hand-pump which tested for good quality.

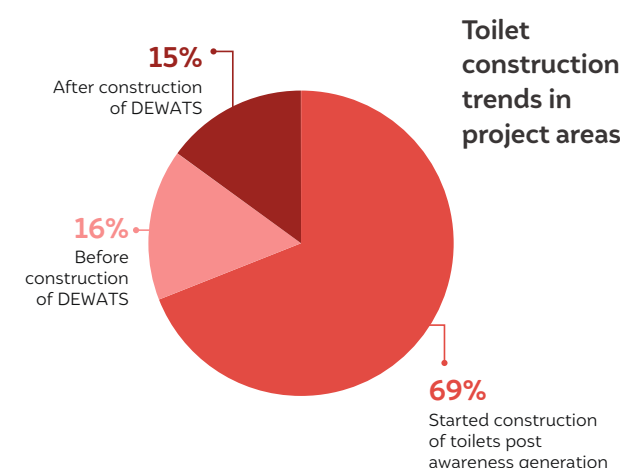
The follow-up concluded with awareness generation regarding health, hygiene and sanitation in local private and public schools and children were taught about hand washing methods. The community was made aware through posters and pamphlets regarding the importance of proper disposal of waste and management of solid and liquid waste. For solid

waste management, many farmers made compost pits and used the waste as raw material for decomposing and for vermin compost to make bio-manure.

For child faeces management, two focus group discussions with mothers having 0-5 years' children were held in both the villages. Children are great motivators in covering sanitation issues like hand washing and managing waste; they make their parents understand the importance of toilet usage. It was found that spreading awareness about sanitation at the school level is important.

The Panchayati Raj Department team visited the village in May 2017 for verification of toilets and sanitation issues and approved it as open defecation free (ODF). A *Nigrani Samiti* (Monitoring Committee) member was selected as a *Swachhtagrahi*.

DEWATS has come up as a support tool for toilet construction, as most of the grey and sewage water has its routes through proper drains. The sub drains are linked to main drains to deliver it to DEWATS treatment chambers. Thus, DEWATS works on the norms and guidelines laid down for ODF by Ministry of Drinking Water and Sanitation, SBM (*Gramin*) Division, Government of India.



## Sanitation Crisis in City's Periphery of Secondary Cities in Uttar Pradesh: A Research Initiation

A research study was conducted in the five cities (Allahabad, Gorakhpur, Lucknow, Jhansi and Saharanpur) from different agro-climatic zones of Uttar Pradesh for field observation and to collect qualitative information on the issue of sanitation. The cities were selected based on population size, decadal growth and a visual assessment of land use change.

The key guiding issues for the study were: (a) Changes in surrounding areas of emerging cities of Uttar Pradesh, (b) Key issues and challenges of natural resource, health and livelihoods in peri-urban areas (c) Drivers of land-use change (d) Changes in the land-use pattern over the decade that led to degeneration of ecosystem services of the area and enhanced the vulnerability of the people living there (e) The impact of the use of the areas as dumping ground for sewage and solid waste generated by the city on the inhabitants of the peri-urban areas and (f) Effective steps for stakeholder engagement in proper management of solid and liquid waste, and, how to achieve the goals of Swachh Bharat Abhiyan in these peri-urban areas.

The study is mainly based on qualitative and quantitative information relying on the visual observation of Google satellite images from two different time periods, and an ethnographic approach which includes semi-structured interviews with peri-urban residents, meetings with key informants and direct field observations. The use of geographical information system enabled the researchers visualise the trend in the city's expansion and determine the land-use classes that showed the most amount of change.

The haphazard urbanisation processes have significantly influenced land-use pattern and aggravated the deteriorating sanitation situation in the peri-urban region in the cities studied. This has significantly influenced land-use pattern and aggravated the deteriorating sanitation conditions in the peri-urban regions which will assume worse forms in near future. In these cities haphazard

growth is already leading to the choking and obstruction of existing drainage lines, and there is also no sanitation infrastructure to link the growing city to the main sewer system, which is essential for future development of the peri-urban area as well as their seamless integration into the city.

Sanitation challenges remain and as high as 77 percent of the population does not have access to toilets, coupled with the fact that there is very low use of the existing toilet facilities. Poor solid waste management is a key issue and discharge of raw sewage into the river and water bodies common. A key sanitation issue in the peri-urban areas of these cities was that a considerable part of agriculture here depends on the city's wastewater to irrigate crops and vegetables. Furthermore, there is indiscriminate dumping of solid waste in low lying peri-urban plots. In some cases the plot owners use the waste to increase the height of the plots.

The study recommended the need for a fundamental change in approach among the planners and policy makers to prevent further land-use change and illegal construction activities. The selling of agriculture land for short-term benefits can be reduced by motivating and demonstrating resilient farming models of agriculture and its long-term benefits to the farmers. The study suggested the need for effective master planning and proper enforcement as well as proper awareness and implementation of Real Estate Regulation Act, 2016. The need for decentralised community owned solid & liquid waste management and restoration of existing water bodies was stressed.



**KEY RESOURCE CENTRE TO SUPPORT SWACHH BHARAT MISSION-GRAMIN IN UTTAR PRADESH**

In recent years, especially after the introduction of Swachh Bharat Mission-Gramin (SBM-G) in sanitation, a number of new issues and challenges have emerged in the sanitation sector such as sustainability of water sources and usage of sanitation facilities, financial and institutional issues, building capacity of government functionaries as well as of other stakeholders under SBM-G to play their role in a changing environment, improving capacity of panchayat raj institutions (PRIs) to manage sanitation and water supply issues, etc. In order to address such emerging issues and challenges, it is necessary that the capacity of different stakeholders is strengthened to enable them to play their role and shoulder their responsibilities effectively.

**Objectives**

- Upgrade knowledge, skills and attitudes of the government functionaries at various levels, PRI representatives, master trainers and other stakeholders
- Equip the trainees intellectually and professionally for carrying out the assigned responsibilities in an effective and sustainable manner
- Keep personnel up-to-date on the new technologies and innovations
- Promote attitudinal reorientation in line with emerging issues and challenges, foster respect for rural community's rights, focus on issues and concerns of the rural community and involve them in the process of planning, implementing and monitoring
- Promote better understanding of professional requirements as well as sensitization to social, economic, technological and political environment in which the implementation is to be undertaken
- Enhance the capacity of Communication and Capacity Development Unit (CCDU)
- Motivate communities and PRIs to adopt sustainable sanitation practices and facilities through awareness creation and health education

**Outcome/Impact**

The empanelment of GEAG as a KRC will continue for the duration of the SBM-G. In the meantime, the following outcomes have been accomplished by GEAG: (a) 58 *Swachhagrahis* trained for total sanitation in rural areas of Gorakhpur district (b) 8 villages triggered during training at Gorakhpur district and (c) Work plan developed and handover done to PRI for ODF villages of 3 blocks of Gorakhpur district.

- Encourage cost effective and appropriate technologies for ecologically safe and sustainable sanitation

In this endeavour, the government felt the need to have institutions of high repute and experience engaged in working on these issues, in imparting training and in other activities to build capacities of different stakeholders. GEAG is empanelled as a KRC for trainings of different levels by Government of India. In this regard GEAG is deputed for 2 five-day trainings of *Swachhagrahis* from Ministry of Drinking Water and Sanitation, Government of India. One training was successfully conducted by GEAG on 12-16 February 2018.







## Publications, Outreach and Networks

GEAG publishes research studies/articles, reports and policy briefs to effectively disseminate its work, increase the impact of its work and advocate on the issues on which GEAG works. GEAG has been using social media to share its experiences.

GEAG is engaged in policy, evidence-based, and rights-based advocacy. As part of rights-based advocacy, GEAG campaigns for small, marginal, and women farmers; women farmers' rights and interests; and climate change resilience.

Small and marginal farmers comprise about 72 percent of the agrarian workforce of Uttar Pradesh, but they are a neglected lot. GEAG tries to secure land rights for these farmers, especially women farmers, so that they get their due entitlements.

GEAG has developed models of agriculture which are economically, socially, and ecologically viable and have been advocated with the government from time to time. GEAG coordinates SAN-UP, a network of NGOs working in sustainable agriculture, and is advocating for building farmers' resilience to climate change.

To advocate for women farmers' land and property rights and for recognition as farmers and their overall empowerment, GEAG led the women farmer's campaign called "Aaroh" in eastern Uttar Pradesh with the support of Oxfam India.

In Gorakhpur, many urban poor people earn their livelihoods from the Ramgarh lake, but it is under threat from increasing urbanisation. GEAG's advocacy prompted the Gorakhpur Municipal Corporation to partner with us, draw up a plan to rejuvenate the lake, and mobilise funds from the central government.



## GEAG ON SOCIAL MEDIA

In our journey to improve our reach to a wider audience and be visible across a larger spectrum, our social media foray began in 2016-17. In the last year, we have added and built on this platform in this digital age of the internet to enhance, engage and communicate better and more effectively, our work, to the environment around us.

We have been able to connect to a larger audience, create a buzz on the events and workshops held, share information on our recent publications, as well as promote an awareness of the work we do.

### Objective

To leverage social media to promote our content, share our knowledge, and consistently engage and converse with practitioners, policy makers and interested forums.


### Activities


We are active in the following spaces and feature content on small-marginal-women farmers, peri-urban areas, environment, urban climate change resilience, disaster risk reduction and gender issues.


### Outcome/Impact


- Real time tweeting of events and workshops
- Visibility of workshops and events improved
- More interaction between participants and shareholders through re-tweets and comments
- Reaching new audience
- Promoted our happenings on social media
- New online communication opportunities
- Blogs on social media shared by partners, stakeholders and others


### Social Media

 Twitter: A daily schedule of hourly spaced tweets from 0915 to 1915, plus retweets of relevant content (@GEAG\_India)

 Facebook: Share interesting news/information and also promote our blogs and videos here. (<https://www.facebook.com/GorakhpurEnvironmentalActionGroupGEAG/>)

 Youtube: All our videos have been uploaded here (<https://www.youtube.com/channel/UCx5-AyIX3BchjOiO4MWOX2A>)

 Blogs: Short features on ground happenings and project synopsis are published here in the form of photo essays, infographics or stories. (<https://geagindia.wordpress.com/>)

 LinkedIn: Who we are, what we do, and also updates in the form of blogs are shared here (<https://in.linkedin.com/company/gorakhpur-environmental-action-group-geag->)

## CONFERENCES AND WORKSHOPS

### National Workshop on Climate change and Disaster Resilience for Urban Children, New Delhi

Drawing from the experiences of child centred climate and disaster resilience building in project cities, GEAG organized a national workshop on 'Climate Change and Disaster Resilience for Urban Children' with the support of UNICEF, India



and SPA, New Delhi on 22 December 2017 in New Delhi. The workshop deliberated on the differential impacts of climate change on urban poor children and the key methodological frameworks required for building resilience of urban poor children. The need for resilience planning mechanisms in cities to address children's needs and vulnerabilities and also the critical role of children's participation in making a difference in the climate change discourse was discussed.



### Regional Conference on Peri - Urban Ecosystems for Enhancing Urban Resilience, New Delhi

A Regional Conference on "Peri- Urban Ecosystems for Enhancing Urban Resilience" was organized by GEAG and ICLEI – Local Governments for Sustainability, South Asia in collaboration with ACCCRN.NET, UNICEF India and SPA, New Delhi India with the support of the Rockefeller Foundation, on 18<sup>th</sup> and 19<sup>th</sup> September 2017 in New Delhi, India. The conference examined various themes including urbanization, managing the peri-urban spaces, maintaining critical natural resources, food-water-livelihood security of poor and marginalized, gender dimensions, political frameworks, and governance issues exacerbating due to the inevitable drift of cities into peri-urban areas as well as the challenges of climate change impacts on these vulnerable areas.



During the course of the year, GEAG also participated in a number of national and international conferences on the broad theme of climate change and disasters. A brief overview of these conferences is provided below:

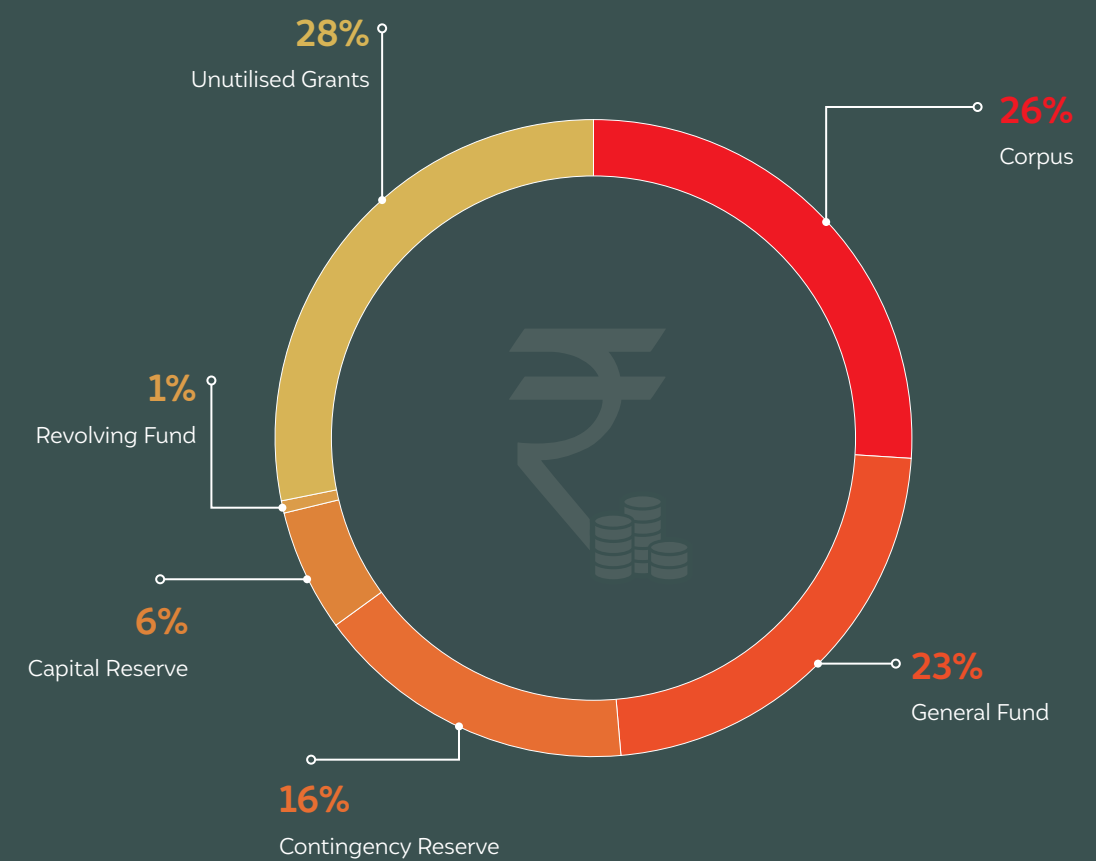
- 8<sup>th</sup> Global Forum on Urban Resilience and Adaptation, Bonn, Germany, 4-6 May 2017: GEAG was part of a Panel Discussion on "Integrating ecosystem-based adaptation and ecosystem services into urban management strategies" and presented its experiences from Indo-Gangetic Plains of India on peri-urban ecosystems for urban resilience.
- 3<sup>rd</sup> Asia Pacific Forum on Urban Resilience and Adaptation, Ho Chi Minh City, Vietnam, 7-8 December 2017: GEAG organized a Panel Discussion on Peri-Urban Ecosystems and Urban Resilience in the conference in collaboration with
- ICLEI World Secretariat and ACCCRN.NET along with other stakeholders. The session deliberated on the cross-country experiences on urban/peri-urban ecosystems and their role in building climate resilience.
- World Urban Forum 9, Kuala Lumpur, Malaysia, 7-13 February 2018: GEAG participated in the Networking Event of the World Urban Forum 9 (WU9) held at Kuala Lumpur from 7- 13 February 2018. ACCCRN.NET and Mercy Corps organized a Panel Discussion on - Trans-Boundary Resilience: Promoting Collaborative Action to Build Inclusive Urban Resilience. GEAG was part of the panel and highlighted the role of Peri Urban Ecosystems for Trans-Boundary Urban Resilience. Other panelists included ISET-International, Lutheran World Relief (LWR), Mercy Corps and OXFAM International.





## GEAG's Balance Sheet: 2017-18

A major part of GEAG's income which flows into the organization is in the form of funds and grants from Multilateral Organizations, Government Agencies and Grantmaking bodies.





# GEAG Team Members



## Head Office - Gorakhpur

<b>Bijay Kumar Singh</b> Project Coordinator	<b>K.K. Singh</b> Project Coordinator	<b>Vijay Kumar Pandey</b> Project Coordinator	<b>Ajay Kumar Singh</b> Project Coordinator
<b>Anju Pandey</b> Project Coordinator	<b>Raj Kanti Gupta</b> Publications Coordinator	<b>Archana Srivastava</b> Project Coordinator	<b>Ravi Prakash Mishra</b> Project Coordinator
<b>Jitendra Dwivedi</b> Media Coordinator	<b>Raja Ram Yadav</b> Coordinator - Accounts & Administration	<b>Ram Kumar Singh</b> Project Coordinator	<b>Subia Ahmad</b> Documentation Coordinator
<b>Kailash Chand Pandey</b> Climatologist	<b>Vijay Kumar Singh</b> Project Officer - GIS	<b>Satyendra Kumar Tripathi</b> Project Officer	<b>Sanjay Kumar</b> Supervisor
<b>Amarjeet Sahani</b> Supervisor	<b>Ram Surat</b> Supervisor	<b>Akshaya Kumar</b> Supervisor	<b>Mahendra Kumar</b> Animator
<b>Mohd. Irfanullah Khan</b> Supervisor	<b>Sanjay Kumar Singh</b> Accountant	<b>A.P. Srivastava</b> Manager	<b>Nikhath Sultana</b> Programme Assistant
<b>Mamata Verma</b> Receptionist	<b>Ram Ratan Sahani</b> Office Assistant	<b>Haider Ali</b> Office Volunteer	<b>Nazruddin Ali</b> Office Volunteer
<b>Ajay Kumar</b> Office Assistant	<b>Raj Kishore</b> Driver	<b>Nandu Kumar</b> Driver	<b>Sugreev</b> Driver

## UP State Office - Lucknow

<b>Gyaneshwar Srivastava</b> Project Coordinator	<b>Ravi Kant Shukla</b> MIS Officer	<b>Vidya Verma</b> Divisional Consultant	<b>Anand Kumar Singh</b> Divisional Consultant
<b>Mohd. Rizzwan</b> Divisional Consultant	<b>Niraj Kumar Jha</b> Divisional Consultant	<b>Ankit Kumar Mishra</b> Divisional Consultant	<b>Santosh Rai</b> Divisional Consultant
<b>Pankaj Srivastava</b> Divisional Consultant	<b>Lalmani Verma</b> Office Assistant		

## Bihar State Office- Patna

**Bijay Prakash**  
Project Officer

## MP State Office- Bhopal

<b>Ramesh Menon</b> Project Coordinator	<b>Deo Kumar Dubey</b> Divisional Consultant	<b>Mukesh Swarnakar</b> Divisional Consultant	<b>Brijmohan Dubge</b> Divisional Consultant
<b>Ashish Purohit</b> Divisional Consultant	<b>Yogesh Sharma</b> Divisional Consultant	<b>Sunil Katore</b> Divisional Consultant	<b>Yogesh Sarathe</b> MIS cum Account Assistant
<b>Manoj Kushwaha</b> Office Assistant			

## National Liaison Office - New Delhi

<b>Nivedita Mani</b> Coordinator - Networking and Liaison	<b>Sakshi Katyal</b> Project Officer	<b>Satyapal</b> Office Assistant
--	---	-------------------------------------



# Executive Board Members

<b>Dr Shiraz A. Wajih</b> <i>President</i>	<b>Dr S.P. Tripathi</b> <i>Vice President</i>	<b>Mr J.K. Srivastava</b> <i>Secretary</i>
Ex. Associate Professor, M.G. P.G. College (Gorakhpur University), Gorakhpur, Uttar Pradesh, India	Ex. Associate Professor, M.G.P.G. College (Gorakhpur University), Gorakhpur, Uttar Pradesh, India	Rtd. Bank Officer Gorakhpur, Uttar Pradesh, India
<b>Ms Nivedita Mani</b> <i>Joint Secretary</i>	<b>Dr Malvika Srivastava</b> <i>Academic Secretary</i>	<b>Mr Aejaz Rizvi</b> <i>Treasurer</i>
Research and Communications, Gorakhpur, Uttar Pradesh, India	Associate Professor, Gorakhpur University, Gorakhpur, Uttar Pradesh, India	Advocate Gorakhpur, Uttar Pradesh, India
<b>Dr Suman Kumar Sinha</b> <i>Councillor</i>	<b>Mr Arvind K. Singh</b> <i>Councillor</i>	<b>Dr Dharmvrat Tiwari</b> <i>Councillor</i>
Former CEO, Uttar Pradesh State Fisheries Department, Government of Uttar Pradesh, Gorakhpur, Uttar Pradesh, India	Retd. Deputy Director, Panchayati Raj Department, Government of Uttar Pradesh, Lucknow, Uttar Pradesh, India	Gorakhpur University Gorakhpur, Uttar Pradesh, India
<b>Dr P. S. Roy</b> <i>Nominated Member</i>	<b>Prof Neelima Jerath</b> <i>Nominated Member</i>	<b>Mrs Nasreen Ahmed</b> <i>Nominated Member</i>
Ex. Director, Indian Institute of Remote Sensing, Hyderabad, Telangana, India	Provost, DB University, Punjab, India	Retd. HOD (Department of B.Ed), Shibli National P.G. College, Azamgarh, Uttar Pradesh, India



Gorakhpur Environmental Action Group (GEAG) is a Non-Government Organization working in the field of the environment and sustainable development since 1975. Ever since its inception, GEAG has been actively engaged in implementing several development projects addressing livelihood issues of small and marginal farmers, particularly women, based on ecological principles and gender-sensitive participatory approach. Besides, GEAG has accomplished several appraisals, studies, researches at the micro and macro levels as well as successfully conducted a number of capacity building programmes for various stakeholders including women farmers, civil societies groups and government officials etc.

GEAG has established its identity in North India as a leading resource institution on sustainable agriculture, vulnerability assessment and strategy formulation, participatory approaches and methodologies and gender issues. Acknowledging its achievements, the United Nations Economic and Social Council (ECOSOC) accorded GEAG Special Consultative Status in the year 2000. GEAG was awarded the Lighthouse Activity Award by UNFCCC in 2013. GEAG also received the Observer Status to the Green Climate Fund in 2015.

**Gorakhpur Environmental Action Group  
(GEAG)**

HIG First Phase 1/4, Siddharthpuram, Tara Mandal,  
Gorakhpur, Uttar Pradesh 273017  
Phone: +91 551 2230004; Fax: +91 551 2230005  
Email: [geagindia@gmail.com](mailto:geagindia@gmail.com)  
Website: [www.geagindia.org](http://www.geagindia.org)

