IORA
Ecological Solutions

ANNUAL REPORT
2021-2022

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ABOUT US

We are committed to “Enabling Conservation of Natural Ecosystems and Developing Climate Resilient Communities through data-driven decision-making, convergent partnerships and innovative financing mechanisms”. We aim to enable a global transition to NetZero and climate resilient economy through NbS. As we strive to reduce GHG emissions, promote sustainable forest management, and steer towards a healthy planet, all our initiatives are in sync with global goals, calling for urgent economic and environmental transformation. We work to tackle the triple planetary crisis of climate change, biodiversity loss and pollution by addressing local realities, through a combination of policy congruence, incentivising conservation, securing finance and developing capacities to support sustainable development.

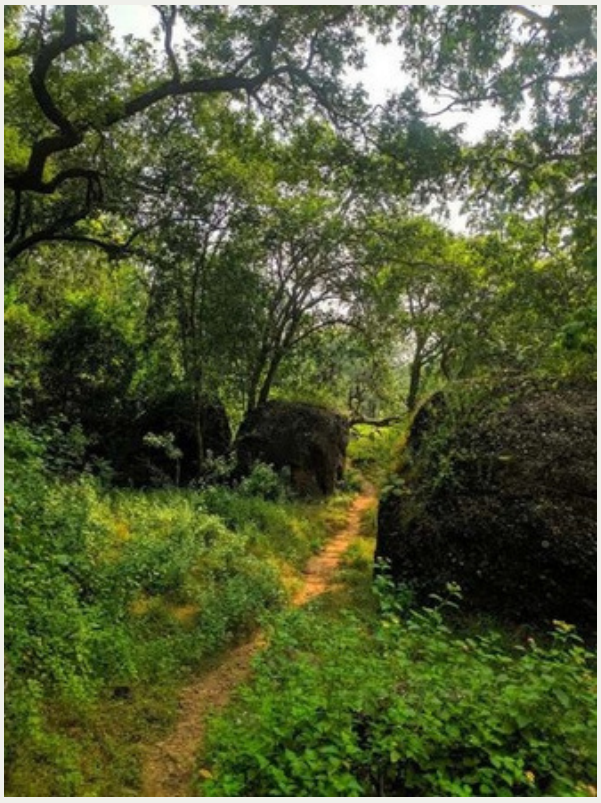
We implement Nature-based Solutions for climate change mitigation and resilience.

Vision

To design and implement integrated nature-based projects that lock-in carbon, protect biodiversity, empower communities and women, and create new livelihoods so that natural ecosystems can be restored and regenerated.

Mission

To protect and enhance cultural, ecological and biological diversity of natural ecosystems through participatory approaches, built upon rigorous science and technologies, and bring sustainability.



FROM THE CEO

The year 2022 witnessed India is going through an unprecedented heatwave. There isno denying that weare amidst a climate crisis and our options to reverse the catastrophe are shrinking by the minute! We have to work in an emergency mode to tackle the current climate crisis and help ecosystemic restoration and adaptation of communities to the changing climate.

In line with our commitment to creating an enabling environment, we spurred actions in 2022 to implement sustainable cooling in India, restore forest landscapes, conserve and manage aquatic species, deploy clean energy solutions, and develop a web-based atlas for spatial management of water resources. Our submission towards the updation of State Action Plan for Climate Change for Uttar Pradesh and Assam has been approved by the state government, paving way for enhanced measures to mitigate the effects of climate change.

We proposed interventions for climate vulnerability/ risk assessment methodologies for India and enabling key climate interventions in Nepal. The past year also saw us working for capacity building of diverse stakeholders on climate action. We are delighted to share some of our experiences, activities, and initiatives for the environment, climate change and sustainability over the past few months.

The year 2023 comes with new opportunities and we look forward to another year of deep engagement and impact. Our response to the climate crisis is continually bolstered by your support and collaboration. We look forward to staying connected and continuing to work together.

Swapan Mehra
CEO

Key Sectors

Forest Management and Conservation

Climate Policy and Advisory

Sustainable Agriculture

Remote Sensing and Geospatial Science

Forest Management and Conservation

Landscape based approach for sustainable land use: A review of technological innovations, livelihood linkages, and the associated opportunities and challenges for effective implementation in India

Client - The World Bank

IORA conducted a study to develop an enhanced understanding of landscape-based approach for sustainable land use in India. The scoping study will analyse existing policies, frameworks, institutions, and capacity building needs across four key sectors - Forest, Agriculture, Water, and Health. The study will also identify potential financing opportunities for landscape approaches from the public sector, international, and domestic private sectors.

We undertook a comprehensive review of current practices in implementing the landscape approach in India and globally, in order to assess, review, and prioritise the suitable technologies under three categories – Implementation, Monitoring and Biotechnology. This will help to determine the scope for technology scalability in similar landscapes.

The study involved multiple stakeholder consultation process to understand the various issues and challenges of landscape-based approach in India. Detailed analysis of relevant case studies were also be undertaken across the 4 focus sectors.

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Analysis of Carbon Sequestration for Wadis (Agri-Horti-Forestry)

Client - BAIF Institute for Sustainable Livelihood and Development (BISLD)

BAIF has been promoting agroforestry and the creation of a value chain under the model called "WADI Plantations" to provide livelihood support to the local communities. The project focuses on the economic upliftment of farmers through sustainable agriculture, social empowerment, and improvement in their quality of life, health and empowerment of women in tribal-dominated areas of Rajasthan, Maharashtra, and Gujarat.

BAIF commissioned IORA to assess the carbon stock in 183 Wadis -143 in Rajasthan, 20 each in Maharashtra and Gujarat. We calculated the carbon sequestered in various carbon pools including above and below ground biomass, and soil organic carbon in assets created through plantations. The species included a mix of horticulture and forestry.

Assessment of Forest Carbon Stock and Building Capacity of Tripura Forest Department and SACTFORM Project Personnel on Assessment of Forest Carbon Stock

Client - Tripura SACTFORM Project PMU, Tripura State Forest Department

Over the past few years, the State government and Forest Department have undertaken a number of initiatives to engage the community in forest conservation and management. The JICA-SCATFORM project was also initiated in Tripura with similar objectives. The project started in 2018-19 with a long-term vision “To improve quality of forest in the targeted catchment by sustainable forest management, soil and moisture conservation and livelihood development, thereby contributing to development of forest ecosystem services and livelihood improvement of forest dependent communities”.

IORA initiated training on good practices for carbon assessment mapping, and basic carbon inventory, following international standards for officials from Tripura Forest Department, under Tripura JICA Project-SCATFORM. The training aimed at imparting working knowledge of GIS techniques, basic carbon inventory and carbon assessment methodology.

The personnel from Tripura Forest Department and SCATFORM Project were given a hands-on demonstration of field data collection methodologies, ground-truthing, data collation protocols, carbon inventory and assessment, and preparation of carbon stock maps. Also included were pre- and post-workshop assessments of trainees' knowledge of carbon assessment methodologies and field techniques, followed by group and individual assessments for monitoring progress.

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Robust and Efficient Analysis Approaches of Remote Imagery for assessing Population and Forest Health in India

Client - Michigan State University (MSU)

The India State of Forests Report, 2021 (ISFR 2021) shows an increase in tree cover outside of forests across India. Our ongoing NASA-funded project – New Transitions in Smallholder Agricultural Systems that Promote Increased Tree Cover Outside of Forests, being implemented in partnership with Michigan State University seeks to identify factors contributing to the tithe increase in Trees Outside Forests (ToF), as well as its ecological and socio-economic benefits to communities.

As part of this project, we are carrying out remote sensing analysis to identify ToF in project areas, and carrying out ground-truthing of satellite imageries through an extensive field exercise. Last year our team visited Odisha to determine the factors driving these trends and ascertain the correlation between the increase in tree cover and the high financial valuation of Ecosystem Services.

Continuing the work, our team recently visited Telangana and conducted field surveys and tree biometric data collection in selected landscapes across Siddipet, Medchal & Medak districts and six districts in Odisha- Bargarh, Bolangir, Kalahandi, Koraput, Malkangiri and Nuapada. The field team also interacted with different line department officials, panchayat members, and farmers, and conducted village- and household-level socio-economic surveys to identify factors driving the trend of increasing ToF systems.

Roadmap to Instituting a Unified Carbon Pricing Regime in India

Client - CDP Operations India Pvt. Ltd.

Carbon pricing is a critical part of the solution to reduce emissions and can provide certainty and encourage timely, large-scale investments in nature-based solutions and low-carbon technologies. This view is increasingly shared by investors and companies who highlight that internal carbon pricing (ICP) measures as part of well-designed long-term plans, can support a smooth transition and avoid some of the economic shocks.

In line with that, CDP has collaborated with IORA to research and analyse the existing carbon markets and pricing mechanisms. The project aims to identify ICP as a force to drive down greenhouse gas emissions and demonstrate the demand for regulatory oversight and introduction of policy mandates. This will provide Indian businesses a strong ground to align with ICP.

IORA will support the engagement with various policy experts to understand the current challenges, implementation barriers, and the way forward. We shall assess the current best practices across other nations and help to devise a suitable policy option for a unified carbon pricing regime in India. This would help businesses and governments to implement carbon pricing to be on the path to achieving the net zero goals.

Carbon Project - Improved Forest Management – Logging to Protected Forest across two forest concessions in East Kalimantan

Client - Ecosecurities Swiss Sarl

PT Integra proposed an Improved Forest Management, Logging to Protected Forest (IFM-LtPF) project for two forest concessions in East Kalimantan:

- PT Belayan River Timber (BRT) totalling 97,324 hectares; and
- PT Narkata Rimba (NR) totalling 65,925 hectares

IORA has partnered with Eco-securities to explore the opportunities to move from a selective logging operation across two concessions in Indonesia to a protected forest regime, facilitated through climate financing. Our team completed the feasibility assessment for this venture.

The geospatial analysis to detect the forest disturbance occurring in both PT BRT and PT NR was analyzed using Sentinel data. The analysis utilized multi-temporal Sentinel 2A and 2B images from 2016 and 2021 for estimation of degradation in both the timber concessions viz. Belayan River and Narkata Rimba.

NDVI was estimated for both the time-points and a density classification based on the NDVI, followed by comparison between the NDVI images between two time- points was performed. The NDVI decrease was considered as degradation and/or deforestation. Based on the analysis, a total of 5,427.71 Ha (1.09%) and 1,102.91 (0.33%) hectares (ha) of deforestation/degradation between 2016 and 2021 for BRT and NR concession areas. Furthering the work, we went for a field visit aiming to facilitate the development of the Project Design Document (PDD).

Climate Policy and Advisory

Development of TNA Package Including Development of selected Training Modules aiming at Conservation and Sustainable, Climate-Resilient Management of Fish and Invertebrate Stocks in The North Eastern Region of India

Client - GIZ India

Considered the global hotspot for biodiversity, the North-East Region is endowed with diversified lotic and lentic water bodies. With 90% of the region's population consuming fish, the aquatic ecosystem is a vital part of the area's food, nutrition, and livelihood security. However, due to factors related to overuse, development of infrastructures in and around water bodies and climate change stresses, the vulnerability of the region's aquatic bioresources has increased further. Taking cognizance of the challenges, GIZ India has undertaken the NERAQ project to develop a nuanced understanding on climate-resilient management, protection and sustainability of aquatic resources in four states – Assam, Meghalaya, Nagaland and Manipur.

One of the components of the NERAQ project is to develop curricula for 4 training institutions in the North Eastern Region containing selected modules aiming at conservation and sustainable, climate-resilient management of fish and invertebrate stocks. Towards this goal, IORA has been roped in to carry-out the training needs assessment that will feed into the development of appropriate training modules. These modules will be delivered to a set of trainers. The aim is to strengthen the capacities of relevant stakeholders for conservation and sustainable use of aquatic resources.

As part of this project, IORA also undertook stakeholder mapping and extensive consultations across Assam, Meghalaya, Nagaland and Manipur for a Training Needs Assessment (TNA) exercise. We identified stakeholders in the aquatic resources sector and held consultations to understand their roles as well as identify existing gaps in knowledge dissemination within the sector. This analysis helped us develop a baseline report to understand the current climate-related challenges in the states. We also conducted a SWOT analysis and developed a scoring matrix to select institutes that would be most suited to develop and subsequently incorporate proposed training to build a better understanding of aquatic resources management and sustainable utilisation.

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Analysis of Climate Change Vulnerability / Risk Assessment Methodologies and Tools in Indian Context

Client - GIZ India

The GIZ study on VRA methodologies and tools for India aims to select the most effective strategies for climate change adaptation and impediments for using VRA tools for decision making.

IORA successfully completed the study, facilitating VRA adoption. We reviewed and analyzed the existing VRA methodologies in India and in countries with similar national circumstances to identify the gaps, challenges, similarities and differences between the methodologies.

A set of comprehensive consultations were planned with a wide range of stakeholders from policy, academia, industry and think tanks for multiple sectors in order to understand the challenges faced by practitioners of VRA and the capacity needs of other stakeholders of VRA.

Additionally, recommendations for strengthening the existing frameworks and methodologies for wide scale adoption by decision and policy makers were also provided. We further identified the capacity needs for state departments in facilitating VRA and enabling climate change aspects into departmental planning and implementation plans.

Support Public-Private Partnership (PPP) Models for Deployment of Decentralized Renewable Energy Systems in Assam and Meghalaya

Client - Shakti Sustainable Energy Foundation

Taking a step towards meeting the objectives of SDG 7, IORA is engaged in piloting the deployment of 10 DRE pilots under the "Support Public-Private Partnership (PPP) models, for deploying the Decentralized Renewable Energy (DRE) Systems in Assam and Meghalaya" project (supported by Shakti Sustainable Energy Foundation).

Our pilots present solutions for rural electrification, building resilient Disaster Risk
Management (DRM) infrastructure, resilient infrastructure
and development of local enterprises. IORA organised a 'Technology Showcase' and stakeholder consultation with an aim of bringing together DRE solution providers and local stakeholders.

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Technologies and Finance needs assessment for Adaptation in India

Client - Shakti Sustainable Energy Foundation

The growing urgency to address climate change calls for adoption of emerging and disruptive climate smart technologies. However, adoption of existing and proven technologies, as well as development and diffusion of new technologies, both face key financial and technological barriers.

Preliminary estimates under India's NDCs suggest that the nation would need around USD 206 billion (at 2014-15 prices) between 2015 and 2030 to implement adaptation actions in agriculture, forestry, fisheries, infrastructure, water resources and ecosystems. The global adaptation agenda under the Paris Agreement further underscores the focus on adaptation and the increasing technology needs therein.

To address this gap, IORA, supported by Shakti Sustainable Energy Foundation has undertaken a study to unpack the key barriers and enablers that may aid in development, adoption and diffusion of disruptive technologies and transformative strategies for climate change adaptation in four focus sectors i.e., Agriculture and Allied, Forest and Other Land Uses, Public Health and Water Resources. Results from this study will assist in building a chapter on technology needs assessment for India in the upcoming National Communication (NATCOM) report submitted to the UNFCCC by the Government of India.

Nepal Country Climate and Development Report (CCDR): Phase-1: Climate Diagnostic for Assessing Institutional, Policy and Planning Systems to deliver on Key Climate Transitions in Nepal

Client - The World Bank Group

Climate action and developmental aspirations often present divergent pathways, especially in the case of small developing nations. To support low-carbon, resilient development pathways, the World Bank's commissioned IORA to undertake a review of the existing policy landscape, institutional arrangements and challenges hindering Nepal from delivering key climate transitions.

As a part of the World Bank's flagship Climate change and Development Report (CCDR), the report aims to tackle disconnects between climate and development policies and identify the highest-impact actions to reduce GHG emissions and build resilience.

IORA undertook a comprehensive sectoral review across AFOLU, Water, Energy, Infrastructure, Transportation and Urban development to deliver insights and recommendations across these priority sectors. The research underscored the importance of sectoral investments in enabling climate transitions through balanced adaptation and mitigation measures to benchmark Nepal's key sectors for regional and global comparisons. Our analysis identified sectoral opportunities and synergies to enable institutional and financial reforms that support high-impact climate action, meaningful GHG emission reductions and improved social inclusion and resilience. The World Bank has commissioned a study to conduct an extensive country-specific desk review of country-wide development goals and climate related trends, policy actions and challenges in Nepal.

Assessing Institutional, Policy and Planning Systems to deliver on Key Climate Transitions in India

Client - The World Bank Group

With the goal of supporting Nepal's low-carbon, climate-resilient development pathway, IORA finalised the review of existing policy landscape, institutional arrangements, and challenges hindering Nepal from delivering key climate transitions.

This study was a part of the World Bank's flagship Climate Change and Development Report (CCDR), which aims to tackle disconnect between climate and development policies to identify the highest-impact actions reducing GHG emissions and building resilience. Towards this, we undertook a comprehensive sectoral review of AFOLU, Water, Energy, Infrastructure, Transportation, and Urban development sectors to deliver insights and recommendations across these priority sectors.

The research highlighted sectoral investments enabling climate transitions through balanced adaptation and mitigation measures to benchmark Nepal's key sectors against regional and global standards. We identified sectoral opportunities and synergies to enable institutional and financial reforms that support high-impact climate action.

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Revision of Assam State Action Plan on Climate Change (ASAPCC)

Client - Assam Climate Change Management Society (ACCMS)

IORA is proud to have contributed to the development of the revised Assam SAPCC 2.0. An important climate policy roadmap, the SAPCC has been approved by the state cabinet.

It ascertains the current and future climate risks as well as their potential impacts and provides adaptation/mitigation actions across nine key sectors - Agriculture and Allied, Water, Energy (Renewable & Energy Efficiency), Forests, Human Habitats (Urban & Rural), Transportation, Human Health, Disaster Management and Strategic Knowledge Management.

Developed through a rigorous consultative process, ASAPCC 2.0 will serve as a key guidance document for the implementation and development of infrastructure, policies, resource planning and more in this decade.

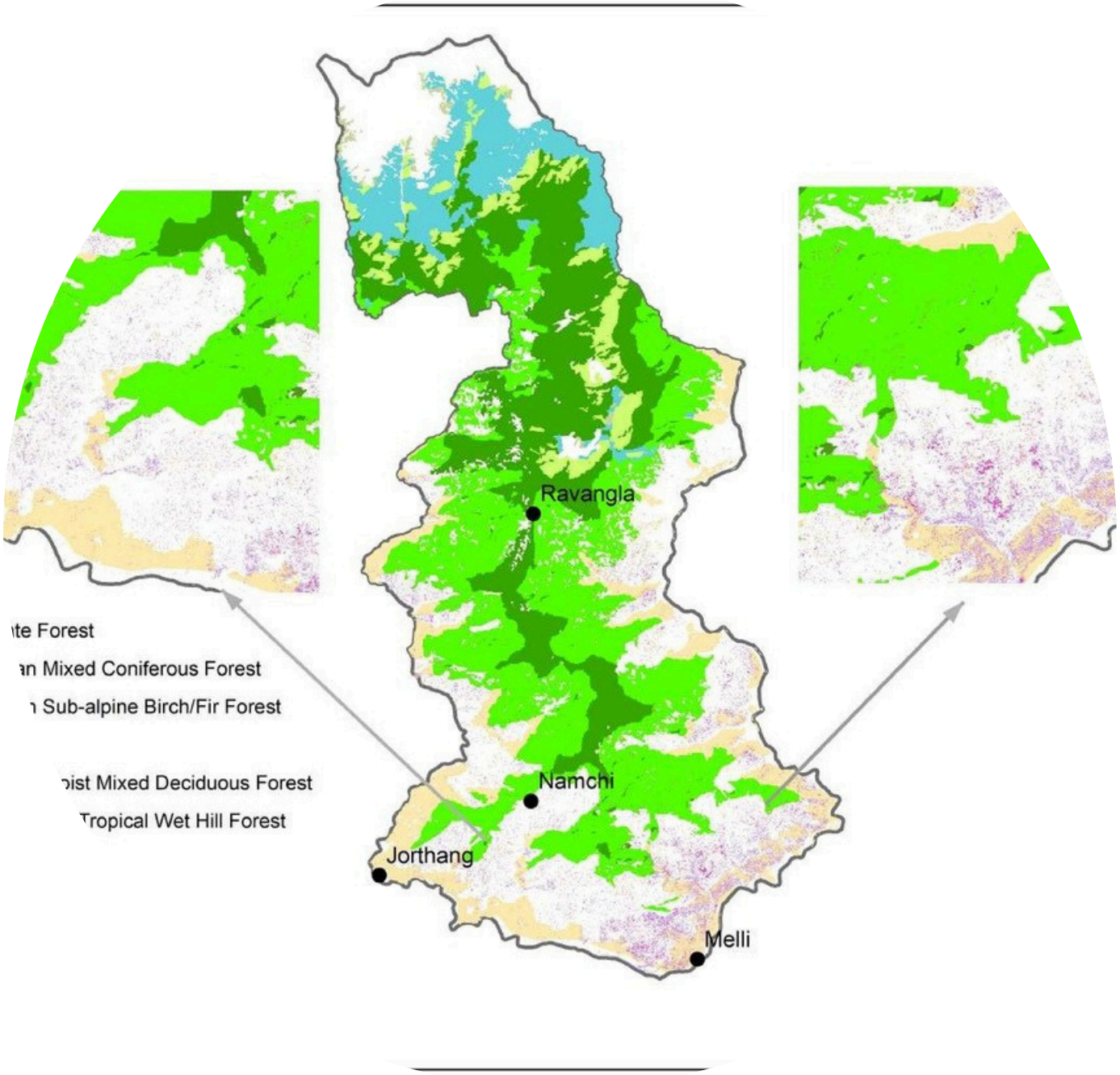
Developing a Policy Roadmap to Support the implementation of the ICAP

Client - The World Bank

IORA's work on the study – "Climate Investment Opportunities in India's Cooling Sector" was launched by the World Bank. Advancing the implementation of the India Cooling Action Plan, the report focuses on the development of actionable roadmaps for achieving sustainable cooling in key areas identified under ICAP – Space Cooling in Buildings, Cold-Chain and Refrigeration (Agriculture and Health), Passenger Transport Air-Conditioning, and Refrigerants.

The report, developed with the support of the World Bank, and in partnership with Energe-se, Tessol and Vertiver, highlights how India's cooling strategy can help mitigate risks to lives and livelihoods, lower emissions, and position India as a global hub for green cooling manufacturing.

It also presents eight prioritised opportunities for concessional financing and private sector investment to advance ICAP goals and foster sustainable cooling in India.



Remote Sensing and Geospatial Science

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Analysis of Synergies and Trade–offs in the Water–Energy–Food Nexus: A Case Study on the Indo–Gangetic Plain (IGP)

Client - GIZ India

IORA, along with Vertiver, developed an interactive platform to assist district-level agricultural management to assess the optimum combination of Rice, Maize, Barley, Sorghum and Millet that should be cultivated in 189 districts of the Indo–Gangetic plain to tackle the current Water–Energy–Food stresses in the region. This study, originally conducted by IIT–Bombay, in collaboration with GIZ, developed a multi- objective optimization model, to maximize crop diversity, farmer's income, energy production and minimize water usage.

Along with visualizing the GIS Data, the interactive platform (to be hosted by IIT-Bombay) will also report optimum crop combinations and corresponding outcomes on changes in the aforementioned parameters, thus allowing users to utilize these data sets effectively in planning and decision-making.

Development of a Web Based GIS Application for Meghna Basin Using Open Source Technology

Client - IUCN India

IORA developed an online Land Use and Water Resources Atlas comprising illustrative thematic maps, infographics, and land parcel information for Meghna Basin. This is an IUCN – Bangkok project, that will allow users to interact with the data at the zonal level, an upgrade from static atlas/ inventory maps.

The atlas is hosted on a publicly accessible cloud for ease of use. It's interface will allow the users to zoom-in, control visibility, toggle layers, set multiple base maps, and render multiple land use through the atlas.

The platform will allow land-use managers and stakeholders, including local governments, non-governmental organizations, land development councils from Bangladesh and India, civil society organizations and academic partners, to manage their land resources effectively.

Sustainable Agriculture

Studying the Climate Vulnerability in Mint Cropping System in Barabanki district, Uttar Pradesh

Client - GIZ India

IORA carried out a comprehensive climate assessment of mint farming practices in Barabanki District, Uttar Pradesh. The project is intended to disseminate knowledge to more than 25,000 mint-producing smallholder farmers in the region to help reduce climate vulnerability of the crop and communities. It also aims to develop a GHG emission measurement framework and develop interventions for GHG mitigation.

We engaged with farmers across Barabanki and Lucknow districts to collect primary data through FGDs, and interviews with key informants and women SHGs. This data collection pertained to current mint farming practices, and key challenges faced with regards to climate change, water availability, and economics of mint farming.

This information will help devise pragmatic and needs based climate adaptation and mitigation strategies for farmers and communities.

Our Clients

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