



# Gujarat Institute of Desert Ecology

Annual Report 2023-24



## Contents

Director's Note.....	2
Thrust Areas .....	7
Services Offered by GUIDE .....	8
Infrastructure.....	9
Terrestrial Ecology Division.....	11
Coastal and Marine Ecology Division.....	26
Natural Resource Management Division .....	28
Environmental Monitoring and Assessment Division .....	31
Remote Sensing and GIS Cell .....	40
GUIDE's Collaborations .....	43
International, National Membership and Recognitions .....	44
Consultancy Services provided by Environmental Monitoring and Assessment Division .....	45
Publications.....	46
Board of Governors & Members of the GUIDE Society.....	47
Human Resource .....	49
Doctoral / Dissertation Students / Training and Internship.....	50
GUIDE's Achievements/Works in Print Media.....	56

Front and Back Cover: Manoj Dholakia

## GENESIS

Gujarat Ecology Commission set up by the Government of Gujarat signed a Memorandum of Understanding, in the gracious presence of the Hon. Chief Minister of Gujarat, with The Jacob Blaustein Institute for Desert Research, Israel, on 9th September 1993, for (i) rehabilitation of degraded soils to increase production of biomass, (ii) to assist in preparing plan for restoration of degraded eco-systems, and (iii) to assist in planning of a Centre of Desert Ecology in Kachchh. Subsequently, Prof. Uriel Safriel, Director of Mitrani Centre of Desert Ecology, Israel visited Kachchh in May 1994. Based on his recommendations, Forests and Environment Department of the Government of Gujarat vide Resolution dated 10th January 1995 accorded administrative sanction to establish Institute of Desert Ecology. Thus, Gujarat Institute of Desert Ecology was established at Bhuj, Kachchh district as an autonomous body and was registered as a Society and a Public Trust.

## MISSION

GUIDE will catalyse the process of ameliorating hardships to human beings in desert ecosystems of Gujarat, following sound ecological principles and carefully using scientific knowledge, imaginative technology and capital.

## MANDATE

- Focus on desert and arid ecosystems of Gujarat, with special emphasis on Kachchh,
- Develop a benchmark database for ecosystems of Kachchh and thereafter undertake continuous monitoring and trend-analysis through specific research activities,
- Identify problem areas and evolve appropriate solutions and management strategies, with the help of applied research,
- Formulate and implement relevant projects that would provide models for emulation,
- Disseminate ecological information and communicate action plans to suit local conditions, through extension and other programs, and
- Provide consultancy and training to NGOs, Government officials, corporate sectors and other natural resource managers, in the principles of ecology, integrated management and sustainable development.





## DIRECTOR'S NOTE



**Gujarat Institute of Desert Ecology (GUIDE)**, stepping into its 29<sup>th</sup> year, continues to function as a pioneering research institute striving to address the needs of community through its research agenda. The Foundation Day was celebrated by the employees and well-wishers of the Institute at Hotel Regenda, Bhuj.



In order to fulfil its avowed mandate to achieve a synergy of science and community in the field of ecology and environment, GUIDE has made

added progress. Akin to previous years, GUIDE's infrastructure has improved both qualitatively and quantitatively. At present the Institute is spread over 4 acres of land and includes a modern administrative building, hostel, Environmental Laboratory with state-of-the-art equipment, compatible working environment aided by over three dozen computers, sophisticated software, digital herbarium centre for the plants of Gujarat, online meeting facilities and library with access to many books and online journals.

Greening the campus is an ongoing process and like previous years, new plantations were undertaken this year as well. Currently, the campus supports rich biodiversity, comprising of 238 angiosperms

and 1 gymnosperm as floral component. The break up includes 180 genera and 62 families, and interestingly, 132 species represent medicinal plants. Most of the campus trees were also GPS tagged and a publication of campus plants were also made in the international journal with the notable distribution of *Salsola oppositifolia* in the campus which was first recorded in Greater Rann of Kachchh in India in 2022. The avifauna comprises of 76 species belonging to 30 Families and 10 Orders, out of which 58 species are resident and rest are migrant species. Many species regularly breed in the campus including House Swifts and the nesting of Baya weaver birds since 2019 is noteworthy.

In order to strengthen its scientific manpower and to enhance the Institutes' capacity to achieve the targets set, GUIDE has recruited Dr. B. Balaji Prasath as Senior Scientist in the Coastal and Marine Ecology Division, Dr. S. K. Sajan and Dr. M. K. Kripa as Scientists in the Terrestrial Ecology Division. Further, supportive field staffs such as JRFs, Project Assistants were also appointed in various divisions for assisting the scientific teams. Thus, GUIDE has multi-disciplinary team of professionals working on different aspects of diverse ecosystems, monitoring and evaluation of programmes in various projects of Terrestrial, Coastal & Marine Ecology, Environmental Monitoring Assessment Divisions of the institute.

The 89<sup>th</sup>, 90<sup>th</sup> and 91<sup>st</sup> meetings of the Board of Governors (BoG) of GUIDE were held on 21<sup>st</sup> August 2023, 20<sup>th</sup> December 2023 and 28<sup>th</sup> March 2024 respectively, while the 27<sup>th</sup> Annual General Meetings (AGM) of GUIDE was held on 20<sup>th</sup> December 2023 under the Chairmanship of Shri. P. K. Taneja, IAS (Retd.). The stewardship and unflinching efforts rendered by our Chairman Shri P. K. Taneja, IAS



(Retd.) and the Board of Governors of GUIDE has enabled us to function with vigour and quality over the previous years. To enhance the global outreach and draw World's attention for the Kachchh dryland issues, GUIDE has established collaboration with International and National Universities/ Institutes. A MoU was inked with GERMI, Gandhinagar and GES, Vadodara.



To address the environmental conservation, biodiversity and management issues, GUIDE has organized several programmes during the year 2023-24. GUIDE was the organizational partner of the National

Conclave on 'Role of Kisan Credit Cards in Development of Dairy and Fishery Sector in India: Status, Challenges, and Way Forward' by the AERC, Anand on 16<sup>th</sup> April, 2023. The programme was Chaired by the Honourable Minister Shri Parshottam Rupala, Minister of State for Animal Husbandry, Dairying and Fisheries of India. In the conclave, Dr. V. Vijay Kumar delivered a talk on 'Agriculture, Animal Husbandry and Fisheries in the Context of Land Degradation/ Climate Change-Challenges and Opportunities'. Akin to previous years, GUIDE has organized an awareness and beach clean-up programme at Mandvi beach, Kachchh, Gujarat on 21<sup>st</sup> May 2023, between 07.00 to 09.00 hrs, in accordance with Beach Clean Up Programme under India G20 Presidency "One Earth, One Family, One Future". Another Beach Clean-up Drive at Mandvi was organized on 16<sup>th</sup> September 2023 in collaboration with NCCR, Chennai as

part of International Coastal Clean-up Day. Dr. V Vijay Kumar along with GUIDE team, officials from forest, Mandvi municipality, NGOs, students, volunteers, etc., have taken active part in the programme.



The Institute has celebrated the International Day for Biological Diversity on 22<sup>nd</sup> May 2023, with the theme of "From Agreement to Action: Build Back Biodiversity" in line with the Kunming-Montreal Global Biodiversity Framework adopted during the COP-15. The Webinar Lecture series has been delivered by Dr. Sudipto Chatterjee, TERI School of Advanced Study, New Delhi; Prof. Indra R. Gadhvi, M. K. Bhavnagar University and Dr. S. Balachandran, Former Deputy Director, BNHS, Mumbai. As a part of the Celebration of the World Environment Day on 5<sup>th</sup> June 2023, plantation of saplings and cleanliness drive was conducted in the GUIDE campus between 8.00 and 10.00 hrs. Further, a webinar was organised with eminent Scientists such as Prof. A. Biju Kumar, University of Kerala, Trivandrum; Dr. Mrugesh Trivedi, KSKV Kachchh University, Bhuj and Dr. B. Anjan Kumar Prusty, Berhampur University along with in-house lectures by Dr. Soumya Dasgupta and Dr. L. Prabhadevi.



Dr. V. Vijay Kumar and Scientists (Dr. M. Jaikumar and Dr. Jayesh Bhatt) have organized a Training program for the Trainers of Khijadiya Bird Sanctuary on 7<sup>th</sup> and 8<sup>th</sup> June 2023 as a part of the DST-WWF project on “Conservation and Sustainable Livelihood through Appropriate Technological Interventions in villages around Marine National Park, Gujarat”. The programme was attended by the I/C Director, MNP, Jamnagar and Mr. R. Dhanapal, DCF, Devbhumi Dwarka along with officials from the forest department, forest guides and naturalists.

On 26<sup>th</sup> July 2023, GUIDE has organized a Webinar on the theme “Vitality of Mangrove Ecosystem - A Contemporary Approach” as a part of “International Day for Conservation of Mangrove Ecosystem”. In the Webinar, three experts such as Prof. S. Bijoy Nandan, Senior Professor, Cochin University of Science and Technology, Kerala; Dr. Kakoli Banerjee, Assistant Professor, Central University of Odisha; Dr. Nehru Prabhakaran, Scientist, Wildlife Institute of India, Dehradun, delivered lectures.

Dr. V. Vijay Kumar and other scientists have attended many online conferences/meetings/workshops and also delivered lectures. Few important meetings/lecture details are given below;

State Level Climate Change training programme for more than 80 Teachers from Gujarat State was organized by the S. D. Shethiya College of Education, Mundra on 18<sup>th</sup> May 2023 and Dr. V. Vijay Kumar delivered a talk on “Desertification and Climate Change - It’s Time for Action”.

He has also participated in the World Environment Day on 5<sup>th</sup> June 2023 organized by Deendayal Port Authority, Gandhidham and delivered a talk on “Plastics Menace: an Addition to Land Degradation and Climate Change”. He has participated in the Webinar on International Day for the Conservation of the Mangrove Ecosystem, Adani Foundation, Mundra on 26<sup>th</sup> July 2023 and delivered a talk on “Mangroves in Gujarat and its Conservation”.





Mr. Dayesh Parmar has delivered a lecture in a Webinar on “Mangrove Conservation” on World Mangrove Conservation Day celebrated on 26<sup>th</sup> July 2023 at Adani Ports and Special Economic Zone, Mundra and Dr. G. Jayanthi, Scientist has delivered a talk in the Webinar series conducted by Department of Botany, PSG College of Arts and Science (Autonomous), Coimbatore, Tamil Nadu on “Cordyceps militaris: The Fungal Gold for Sustainable Health and Development” on 11th August 2023.

On 7<sup>th</sup> September 2023, Dr. V. Vijay Kumar has attended the workshop on “Climate Change Mitigation in Protected Areas: Case Studies from Asia” jointly organized by the International Union for the Conservation of Nature (IUCN) and World Commission on Protected Areas (WCPA), in collaboration with the Korea National Park Service (KNPS), Asia Protected Area Partnership (APAP), Parks Canada, and the Ministry of Environment, Government of Japan (MoEJ). On 22<sup>nd</sup> September 2023, Dr V. Vijay Kumar delivered a talk on “Climate Change and Desertification Scenario – Investing Nature Based Solutions” in the capacity building program for the officials of state departments and organizations, under Virtual Classroom based training program on “Nature based Solutions for Disaster Risk Reduction”, organized by the Gujarat Institute of Disaster Management (GIDM), Gandhinagar.

On 12<sup>th</sup> October 2023, Dr. V. Vijay Kumar participated (along with Dr K Karthikeyan and Dr. Balaji Prasath) in the programme on “Natural Farming” under the gracious presence of the Hon. Governor of Gujarat at Shantivan-Mundra, organized by the Adani Foundation/ APSEZL, Mundra. On 17<sup>th</sup> October 2023, Dr. V Vijay Kumar given a lecture for faculty of Economics on “Challenges and Livelihood

Opportunities in Drylands” in the online National Refresher course in Economics organized in collaboration with UGC, HRDC and Sardar Patel University, Vallabh Vidyanagar, Anand.

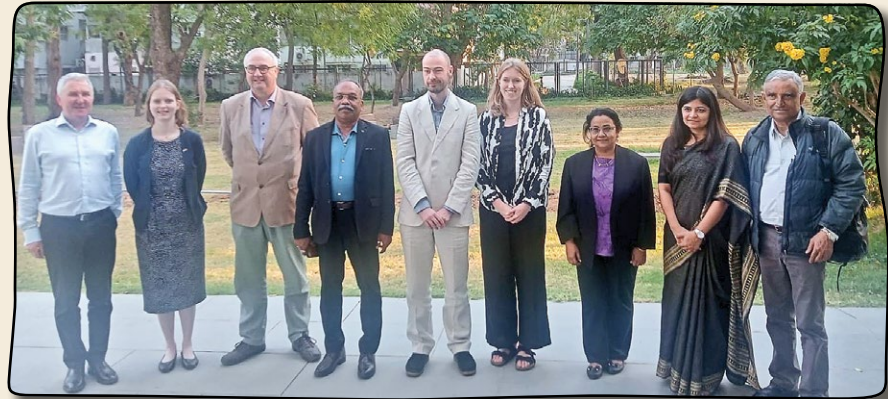


On 4<sup>th</sup> September 2023, a special talk by Dr. Ashad S. Rahmani on “Emerging Threats to Indian Birds” has been jointly organized by the Corbett Foundation, KSKV Kachchh University, Gujarat Institute of Desert Ecology and R. R. Lalan College at KSKV Kachchh University, Bhuj. GUIDE organise

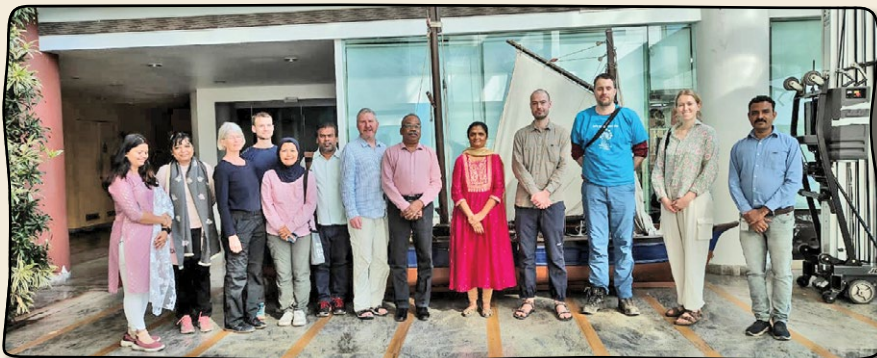
regular conference for dissemination of scientific knowhow and every year an important topic is chosen for the same. As part of this, a National Conference on “Water and Environment: Challenges and Opportunities for Sustainable Development” was organised during 18<sup>th</sup>-20<sup>th</sup> December 2023 at the National Forensic Sciences University, Gandhinagar. Dr. Deepak Apte, Member – Expert Appraisal Committee - IA Policy; Former Chairman, EAC (CRZ & Infrastructure I), MoEF&CC, Govt of India, New Delhi has addressed the audience. The Conference event was attended by Academicians, Researchers, Students, Industrialists and Environment professionals representing various states and Union territory including Gujarat, Maharashtra, Madhya Pradesh, Rajasthan, Uttarakhand, Odisha, Tamil Nadu, Kerala, Telangana, Karnataka and New Delhi were present.



GUIDE was a partner in the workshop on “United Nations Global Ocean Decade Programme for Blue Carbon (GO-BC)” held on 25<sup>th</sup>-26<sup>th</sup> January, 2024, jointly organized by Prof. Willium Austin - St. Andrews University, Scotland, Gujarat Institute of Desert Ecology (GUIDE) and Ahmedabad University.



Further, the UK team lead by Prof. Willium Austin - St. Andrews University, Scotland visited Gujarat Institute of Desert Ecology on 23<sup>rd</sup> January 2024 and follow-up field visits were conducted at Luni mangrove areas. The team also had a meeting with officials from Adani Foundation, Mundra.



The Vice Chairman and Dr. V. Vijay Kumar along with scientists participated in the Workshop. The other participants were Deputy High Commissioner - British High Commission, officials from Environment Department - UK, Academics and institutes from Gujarat.



As part of academic advancement, students from various universities undertake their Dissertation and Interns at GUIDE every year. Apart from this, National and International Researchers and Students regularly visits GUIDE and interact with the scientists of GUIDE. The Professors and students from Mumbai University has visited GUIDE during 6<sup>th</sup> February 2024.





As a part of Scientific event participation by Interns of GUIDE, Ms Himanshi Thakkar, from Department of Botany, Gujarat University bagged First prize in the Poster Presentation for her research work on “Estimation of Above Ground Biomass - A review of available Literatures and their accuracy in Peri Urban areas”.

Padmashree Shavjibhai Dholakia has invited Dr. V. Vijay Kumar for the Jal Utsav function and he has participated in the programme on 22<sup>nd</sup> and 23<sup>rd</sup> November 2023 at Dudhala, Amreli district.

To boost the employment engagement within the organisation, cultural programme was organised in GUIDE as part of Navratri event during October 2023. To boost scientific ambiance in the Institute and to keep abreast of the latest developments in science and technology, a Journal Club and e-newsletter (guide.net) are in progress.

Dr. G. Jayanthi participated in the Bilateral Workshop Organized by Indo-German Science and Technology Centre (IGSTC) and delivered her research findings on the topic, “Revisiting the Potential of Bio-stimulants: A Journey from Lab to Farmer’s Field Towards Enhancement of Crop Sustainability and Resilience in Stressed Environment.” The workshop was held during 13<sup>th</sup> - 15<sup>th</sup> March 2024, Organized by Uttar Banga Krishi Vishwavidyalaya, Coochbehar, West Bengal. The event had a total of 21 participants from Academia, Research Institutes and Industries in which 10 were from Germany and 11 were from India who are working on Microbial Biostimulants.

## THRUST AREAS

- Desertification and land degradation process
- Biodiversity assessment and its conservation and management
- Restoration of degraded ecosystems including grassland, forests, wetlands, mangroves, etc.
- Ecological restoration of mining and industrial areas
- Regional environmental assessment and planning
- Socio-economic studies for development options
- Natural resource management in arid and semi-arid zones (rangeland ecology, agro-ecology)
- Impact of invasion by exotic and introduced species
- Remote sensing & GIS applications for biodiversity conservation and environmental planning
- Coastal biodiversity and coastal monitoring
- Seaweed and Polyculture activity
- Development and conservation options for Rann of Kachchh
- Watershed development and management



## SERVICES OFFERED BY GUIDE

### Research

- Terrestrial Biodiversity assessment and conservation studies (Biodiversity Action Plan-BAP)
- Climate vulnerability studies
- Restoration of degraded lands (Grassland and saline kinds)
- Remote sensing & GIS applications for biodiversity conservation & environmental planning
- Social Impact Assessment (SIA) and Social Impact Management Plan (SIMP) and Social Audit (SA)
- Feasibility studies for Community Development projects
- Monitoring and Evaluation:
- Third party evaluation for CSR projects
- Geo-tagged, mobile app-based surveys
- Data analysis and visualisation
- Marine Ecological Impact Assessment studies of port and coastal industries
- Ecological health assessment (Benthic faunal diversity)
- Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP)
- Environmental monitoring of matrices such as Air, Stack, Water, Soil, Sediment & Industrial effluents, etc.
- Environmental Auditing

### Capacity Building and Knowledge Management

- Provide training, develop knowledge products, education and communication (IEC) materials in the areas of sanitation, hygiene,

health, water conservation and safe usage, environmental awareness, biodiversity conservation, and natural resource management, seaweed and polyculture, laboratory analytics and mushroom cultivation.

- Capacity Building of NGOs in real time data collection and motivate to take data driven decisions

### Community Outreach and Implementation Activities

- Mangrove Restoration and plantation activities
- Implementing Government / CSR funded Watershed development, carbon neutral livelihood projects and environmental conservation initiatives.
- Build community-based climate resilience technologies and cool roofs.
- Promote social / village forestry in the rural and urban areas to increase biodiversity and to reduce heat stress.

### Teaching and Research

GUIDE scientists are actively involved in guiding Ph.D. and Master's degree students from various Universities across the country. They are also guiding Bachelor students in Marine Sciences from the Government Science College, Mandvi, and Government Engineering College, Bhuj, Gujarat and various other Universities and Colleges within and outside the State.



## INFRASTRUCTURE

### Campus

GUIDE campus is spread over 04 acres with substantial green cover. The campus encompasses earthquake resistant main Institute building with administrative block, five different Environmental laboratory is of EMA division, RS and GIS Cell, Environmental Audit Cell, library, Herbarium unit and board room. Earthquake resistant hostel block with 08 double occupancy is located adjacent to the Institute, with well-furnished accommodation and dining facilities to researchers. There are also 12 quarters for Scientists and the Director's bungalow at the backside to the main building. Green house, pot culture studies and experimental pots for the cultivation of mushroom is situated within the premises for experimental and training purposes. The campus is rich in biodiversity with more than 252 species of plants and 76 bird species. Many birds breed within the campus with more than 100 nests of house sparrows and other birds. The Scientists of GUIDE have identified and cultivated rare medicinal plants within the campus.



About 132 medicinal plants are present within the campus including *Commiphora stocksiana*, *C. wightii*, *Grewia tenax*, *Cassia fistula*, *Azadirachta indica*, *Tinospora cordifolia*, *Tecoma undulata*, *Capparis cartilaginea*, *Adansonia digitata*, *Acacia nilotica*, *Prosopis cineraria*, *Vitex negundo*, *Cassia auriculata*. etc. GUIDE is also propagating endangered and uncommon plants of Kachchh at the campus to establish a seed bank for subsequent plantations.

### Analytical Laboratory

The laboratory is equipped with State-of-art facilities instruments/ equipment viz., Atomic Absorption Spectrophotometer, UV-Vis Spectrophotometer, Flame photometer, Respirable Dust Samplers, Spectro-fluorometer and Ion Chromatograph, etc., to facilitate analysis of air, water, wastewater, soil, sediment for physical, chemical, microbial and biological parameters. The laboratory facilities at GUIDE cater to its in-house research activities, industrial sectors, agriculturists and NGOs. The laboratory consists of internal units





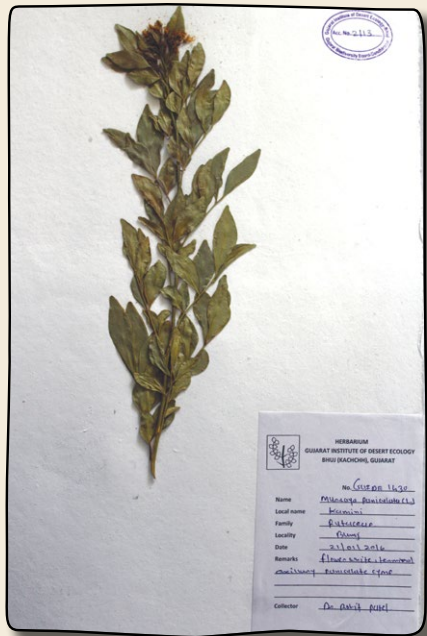
like Water and Soil Laboratory, Microbiology Laboratory, Marine Biology Laboratory, Chemistry Laboratory, Instrumentation Room and Environmental Engineering, Monitoring and Audit Cell.

### Herbarium and Museum

The Herbarium has great significance and is essential for the study of plant taxonomy, geographic distributions, and the stability of nomenclature. Well established herbarium facility with vast collection of angiosperms of Gujarat state is available as a reference Centre for students and researchers. A total of 1011 floral species authenticated by the BSI and around 5000 herbarium sheets are stored scientifically at GUIDE. Specimens of intertidal molluscan shells from Kachchh and Jamnagar coastal habitats are preserved as ready reference materials. Efforts are also being made to set up a museum of marine fauna of the Gulf of Kachchh.

### Library and Documentation

GUIDE's library houses 1519 books on different aspects of environment including ecology and climate change. A separate documentation unit with around 603 technical and research reports is also maintained.



## PROJECT HIGHLIGHTS

### TERRESTRIAL ECOLOGY DIVISION - COMPLETED PROJECTS

#### 1. Baseline study on Land Use Land Cover, Biodiversity, Soil and Water parameters in the Umarasar mine area, Lakhpat Taluka, Kachchh

Funding Agency : Gujarat Mineral Development Corporation (GMDC) - Ahmedabad

Project Team : Nikunj B. Gajera, K. Karthikeyan, Jayesh B. Bhatt, Dayesh Parmar, Mukesh H. Koladiya, Vivek U. Chauhan, Hirji Dangar, Raj Joshi

Project Duration : November 2023 – March 2024

This study of land use land cover, biodiversity, soil, and groundwater in the area provides essential insights for sustainable ecosystem management. The coexistence of barren and vegetated land calls for holistic land management. Species like *Neltuma juliflora* demonstrate resilience, highlighting their role in stability. Biodiversity documentation shows human impact, with conservation needed, especially in mining-affected areas. Soil analysis reveals variable properties affecting agriculture, and groundwater quality points to acidity and salinity issues, requiring careful management. Study findings support informed decision-making for biodiversity conservation and sustainable development in the region.





## 2. Rapid Biodiversity Assessment and Wildlife Conservation and Management Plan for the Third Berth (Jetty) at Petronet LNG Ltd, Dahej-Bharuch

Funding Agency : Petronet LNG Limited (PLL), New Delhi

Project Team : Nikunj Gajera, Balaji Prasath,  
Durga Prasad Behera, Mukesh H. Koladiya,  
Viral D. Vadodariya

Project Duration : Sept. 2023 – March 2024

### Project Description

A study conducted between October 2023 and March 2024 assessed biodiversity near the Third Berth (Jetty) at Petronet LNG Ltd, Dahej-Bharuch. It identified 110 plant species, 113 terrestrial vertebrate species (including 10 herpetofauna, 91 birds, and 12 mammals), with 18 species of high conservation importance. Among these, 5 are IUCN-listed Threatened species, and 16 are listed under Schedule-I of the Wildlife Protection Act 1972 (Amendment 2022). The report proposes a conservation plan with a budget of Rs. 127 Lakhs to protect these species and habitats. Petronet LNG Ltd will support Bharuch Forest Division financially for implementing conservation activities.



## 3. Biodiversity Status Assessment and Conservation and Management Plan for wildlife in buffer areas of the underground water pipeline already installed passing through Nara village forest area of Lakhpat Taluka, Kachchh

Funding Agency : Archean Chemical Ind. Ltd. Kachchh

Project Team : Nikunj B. Gajera, Jayesh B. Bhatt,  
Dayesh Parmar, Mukesh H. Koladiya,  
Rakesh A. Poptani, Vivek U. Chauhan

Project Duration : Nov. 2023 – March 2024

### Project Description

A study conducted between November 2023 and March 2024 assessed biodiversity near the Nara village forest area of Lakhpat Taluka. It identified 52 plant species, 91 terrestrial vertebrate species (including 13 herpetofauna, 66 birds, and 12 mammals), with 17 species of high conservation importance. Among these, 5 are IUCN-listed Threatened species, and 17 are listed under Schedule-I of the Wildlife Protection Act 1972 (Amendment 2022). The report proposes a conservation plan with a budget of Rs. 7 Lakhs to protect these species and habitats. Archean Chemical Ltd will support Banni Forest Division financially for implementing conservation activities.





#### 4. Rapid Biodiversity Assessment within the Welspun City Campus

Funding Agency : Welspun World Ltd.

Project Team : Nikunj B. Gajera, Jayesh B. Bhatt,  
Mukesh H. Koladiya, Rakesh A. Poptani,  
Vivek U. Chauhan

Project Duration : April 2023 – March 2024

##### Project Description

Urban biodiversity refers to the variety of wild animals, plants, microorganisms, and other species within urban areas. It is crucial for maintaining urban ecosystems, enhancing landscape beauty, providing economic benefits, and promoting human well-being. A floral biodiversity assessment in Welspun City found 328 plant species from 214 genera, 63 families, and 30 orders across three seasons. The faunal study documented 105 species, including 10 herpetofauna, 85 avifauna, and 10 mammals.





## 5. Social Impact Assessment of Gujarat Mineral Development Corporation (GMDC) for three blocks Valiya, Kadipani, and Lakhpat- Gujarat.

Funding Agency : Gujarat Mineral Development Corporation - Ahmedabad

Project Team : Jayesh Bhatt, Ajay K. Gohel, Viral D. Vadodariya, Kaksha Soni

Project Duration : Sept. 2023 – January 2024

### Project Description

GMDC is state Government undertaking company with its business portfolio in the field of exploration and exploitation of various minerals/ores green energy generation and captive/merchant selling of minerals to cater the need of industries across the state. GMDC is currently operating 5 lignite mines in Kachchh, Bhavnagar and South Gujarat, 10 bauxite mining leases Kachchh District and 1 fluor spar-mining lease at village- Ambadungar, Taluka-Kavant, Dist. Chhota Udaipur.

To fulfil the Statutory requirement as per the RFCTLAR & R Act 2013 and subsequently Rules by the Govt. of Gujarat, GMDC allotted the work for conducting Social Impact Assessment (SIA) study and associated activities as per the Right to fair compensation, Transparency in land Acquisition, Rehabilitation and Resettlement Act, 2013. The field study of SIA has been completed in three blocks namely Kavant, Lakhpat and Valiya of Chhota Udaipur, Kachchh and Bharuch district covering 22 villages and the final report has been submitted.







## 6. Long-term monitoring and study on Migratory Birds and their habitat at Jawaharlal Nehru Port Trust, Navi Mumbai

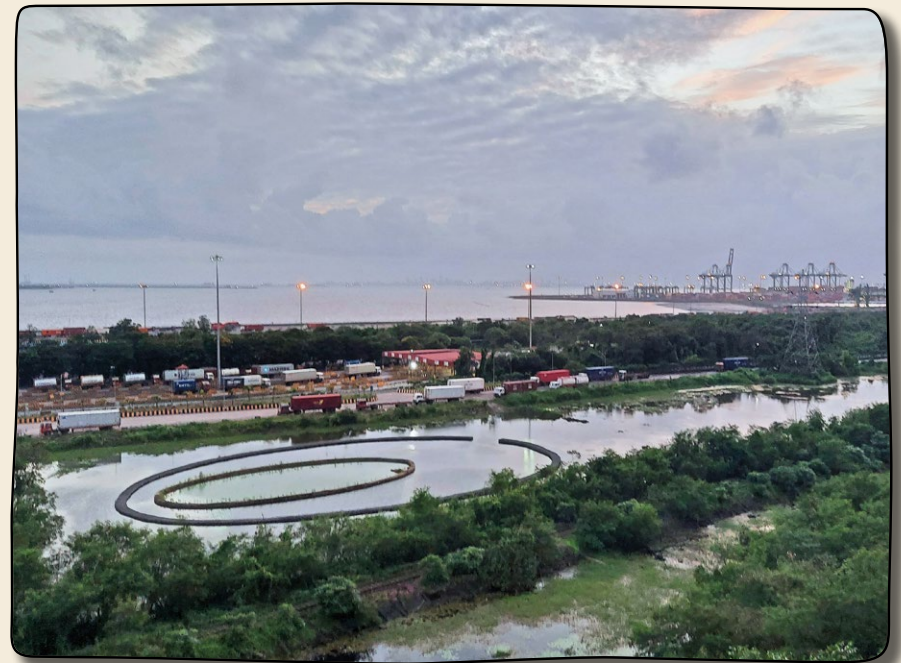
Funding Agency : Jawaharlal Nehru Port Authority  
New Mumbai

Project Team : Nikunj B. Gajera, V. Kannan, Mukesh H.  
Koladiya, Dayesh Parmar, Viral D. Vadodariya

Project Duration : March 2023 - March 2024

### Project Description

This report presents findings from an avifaunal study conducted from October 2023 to March 2024, detailing bird diversity, species assemblage, and conservation status based on IWPA-1972 and IUCN 2023. Despite habitat disturbance from development, bird biodiversity remains high, particularly among migratory species near the coastline and waterbodies around the port. A total of 165 bird species, including 59 migratory and 20 conservation-significant species, were recorded, with Lesser Flamingo being the most abundant. Minimal impact from urbanization was noted, and tidal movements influenced migratory and wader bird patterns. Long-term conservation planning is recommended to sustain biodiversity alongside development.





## 7. Preparation of People's Biodiversity Register for 10 BMC's of Morbi District

Funding Agency : Gujarat Biodiversity Board, Gandhinagar, Gujarat

Project Team : Jayesh B. Bhatt, Mukesh H. Koladiya, Rakesh A. Poptani, Ajay K. Gohel, Bhagirath R. Paradva

Project Duration : August 2022- February 2024

### Project Description

The Biological Diversity Act, 2002 mandates to set up a Biodiversity Management Committee (BMC) in every gram panchayat of the country. The committee primarily work on documentation of local biodiversity in the form of People Biodiversity Register (PBR).

Gujarat Institute of Desert Ecology have been empanelled as Technical Support Group (TSG) for PBR preparation of Maliya taluka for Morbi District and allotted 10 BMCs for the preparation of PBR. The training for BMC members for preparing PBR and collection of data on flora and fauna have been completed in the 10 villages (Haripar, Manaba, Mandarki, Meghpar, Sarvad, Targhari, Vadharva, Varsamedi, Venasar, and Virvadarka). The final PBR have been submitted to GBB. The last phase of PBR documents have been submitted.





## 8. Preparation of People's Biodiversity Register for 10 BMCs of Patan District

Funding Agency : Gujarat Biodiversity Board, Gandhinagar, Gujarat

Project Team : Jayesh B. Bhatt, Ajay K. Gohel, Rakesh A. Poptani, Bhagirath R. Paradva, Viral D. Vadodariya

Project Duration : August 2022 - February 2024

### Project Description

Gujarat Institute of Desert Ecology have been empaneled as Technical Support Group (TSG) for PBR preparation of Santalpur taluka for Patan District and allotted 10 BMCs for the preparation of PBR. The training for BMC members for preparing PBR and collection of data on flora and fauna have been completed in the 10 villages (Fangli, Jakhotra, Lodra, Madhutra, Par, Parsund, Sindhada, Vauva, Zazam, and Zekada). The documentation of traditional knowledge has been completed. The final PBR reports were submitted to Gujarat Biodiversity Board. The last phase of PBR documents have been submitted.



## 9. Preparation of People's Biodiversity Register for 10 BMCs of Kachchh District

Funding Agency : Gujarat Biodiversity Board, Gandhinagar, Gujarat

Project Team : Jayesh B. Bhatt, Mukesh H. Koladiya, Ajay K. Gohel, Bhagirath R. Paradva, Viral D. Vadodariya, Rakesh A. Poptani

Project Duration : August 2022- February 2024

### Project Description

Gujarat Institute of Desert Ecology have been empaneled as Technical Support Group (TSG) for PBR preparation of Bhuj Taluka under Kachchh District and allotted 10 BMCs for the preparation of PBR. The training for BMC members for preparing PBR and collection of data on flora and fauna have been completed in the 10 villages (Dhorado, Gajod, Habay, Hodka, Mithdi, Nadapa, Nagiyari, Padhar, Ratadiya, and Samatra). Documentation of traditional knowledge has also been collected. The final PBR reports were submitted to Gujarat Biodiversity Board.





## 10. Greenbelt Development of 10,000 plants at Deendayal Port Authority, Kandla

Funding Agency : Deendayal Port Authority - Kandla

Project Team : Jayesh Bhatt, Bhagirath Paradva,  
Rakesh Poptani

Project Duration : August 2023 – March 2024

### Project Description

Deendayal Port authority in Kachchh District of Gujarat State (formerly Kandla Port Trust), operated by Deendayal Port Authority (DPA). It is a Gateway Port to the hinterland in the western and northern states of India. DPA is One of the 11 major Ports of India situated at Kandla creek, Gulf of Kachchh. In 1955, Deendayal Port acquired the status of a major Port in India. Major commodities handled by the Deendayal Port are Crude Oil, Petroleum product, Coal, Salt, Edible Oil, Fertilizer, Sugar, Timber, Soya bean, Wheat. Deendayal Port Authority is committed towards environment protection since its establishment and has taken many initiatives towards increasing green cover and greenbelt development. To enhance and strengthen Greenbelt Development, the GUIDE has been allotted to develop a greenbelt area within the port area in phase wise manner. GUIDE has been allotted to raise 10,000 plants at a suitable site for the 2nd phase. More than 11,000 trees have been planted at two selected locations during the second phase. 90% survival of the plants have been observed.





## TERRESTRIAL ECOLOGY DIVISION - ONGOING PROJECTS

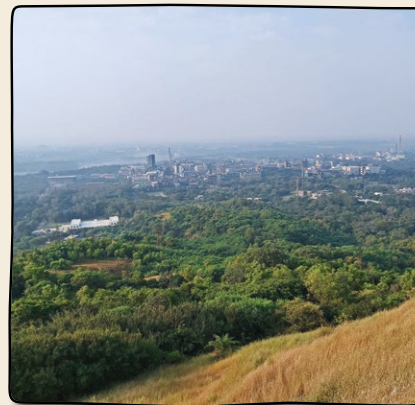
### 11. Biodiversity and Ecological Survey in the Atul Ltd. Campus, Gujarat

Funding Agency : Atul Ltd. Valsad

Project Team : Nikunj B. Gajera, Jayesh B. Bhatt,  
Dayesh Parmar, Viral D. Vadodariya,  
Vivek U. Chauhan

Project Duration : August 2023 – July 2024

The biodiversity study at Atul Ltd. recorded 328 plant species and 141 faunal species (115 birds, 13 reptiles/amphibians, and 13 mammals), with seasonal and zone-specific diversity observed. Key species of conservation concern included *Aegle marmelos*, *Dalbergia latifolia*, and the Near Threatened Black-headed Ibis. The Residential Zone showed the highest biodiversity, especially during winter, supported by consistent water availability. Conservation efforts, including the 'Sanjeevani' plantation drive and a Miyawaki forest initiative, reflect Atul Ltd.'s commitment to integrating biodiversity into its operations and promoting sustainable development through native afforestation and ecosystem resilience.





## 12. Study on the Ecological Feasibility in Priority between two Priority areas and Potential areas under GIB Habitats & Lesser Florican Habitats in Abdasa taluka, Kachchh

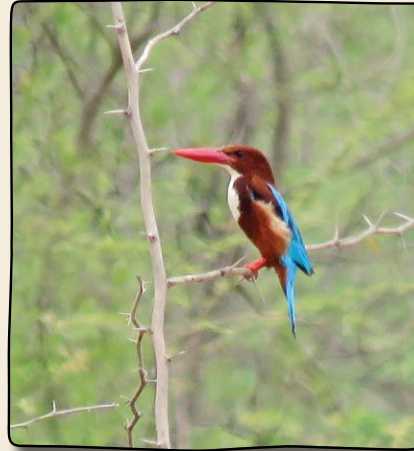
Funding Agency : PGVCL & GETCO -Bhuj

Project Team : Nikunj B. Gajera, Jayesh B. Bhatt, S. Sajan, M. Kripa, Mukesh H. Koladiya, Dayesh Parmar, Viral D. Vadodariya, Rakesh A. Poptani, Vivek U. Chauhan, Kaksha Soni, Mosin Khatri

Project Duration : January 2024 – July 2024

### Project description

India's increasing energy needs have driven the expansion of power transmission lines, impacting biodiversity, especially in habitats essential for the endangered Great Indian Bustard (GIB). A Supreme Court order now mandates that these lines be installed underground in priority GIB areas where possible. The study by the Gujarat Institute of Desert Ecology in Abdasa Taluka, Kachchh, revealed significant land use changes from 2000 to 2023, including a 54% decline in grasslands due to expanding agriculture and thorn forest growth, which threatens GIB habitats. The study documented 198 plant and 150 animal species, including critically endangered and vulnerable species, with invasive species like *Neltuma juliflora* affecting grassland diversity.





**13. Study on non-vegetated mudflats for Migratory birds within 10 km of the perimeter from the proposed project of construction of out fitting jetty & floating dry rock with allied infrastructure and preparation of long-term mudflat conservation and monitoring plan in the proposed project in Vadinar, Devbhumi Dwarka, Gujarat.**

Funding Agency : Deendayal Port Authority - Vadinar

Project Team : Nikunj B. Gajera, V. Kannan,  
Durga Prasad Behera, Kapilkumar Ingle,  
Mukesh H. Koladiya, Dayesh Parmar

Project Duration : August 2023 – September 2024

A study around the DPA Port area at Vadinar recorded 109 bird species within a 10 km radius, including 19 long-distance migratory, 81 resident, and 9 local migratory species, highlighting the region's rich avifauna despite ongoing development. The peak inward migration in Gujarat's coastal areas occurs in September, with the highest bird presence noted in December, particularly near creeks that attract large migratory populations like flamingos and waders. Thirteen threatened species were observed, emphasizing the area's conservation importance. Additionally, intertidal mudflats, vital for various benthic organisms and shorebirds, showed diverse fauna across six phyla, with molluscs as the dominant group. Pre-monsoon data indicated the highest species density at site S-1. Moving forward, the study will focus on conservation strategies for mudflats and migratory bird habitats, using data from both pre- and post-monsoon surveys.





#### 14. Maintenance of Greenbelt (Phase-I) Development in Deendayal Port Authority at Kandla for a period of two years

Funding Agency : Deendayal Port Authority - Kandla

Project Team : Jayesh Bhatt, Bhagirath Paradva,  
Rakesh Poptani

Project Duration : November 2023 – October 2025

##### Project Description

Deendayal Port Authority is committed towards environment protection since its establishment and has taken many initiatives towards increasing green cover and greenbelt development. To enhance and strengthen Greenbelt Development, the GUIDE has been allotted to develop a greenbelt area within the port area in phase wise manner. During the first phase, 5000 plants have been raised at suitable site during the year 2023-24. GUIDE has been allotted to maintain and monitor the plantation raised during the 1st phase of 5,000. SMC work and watering have been going on and survival assessment have been made periodically.







### 15. Preparation of People's Biodiversity Register for 20 BMCs of Morbi District

**Funding Agency** : Gujarat Biodiversity Board, Gandhinagar, Gujarat

**Project Team** : Jayesh B. Bhatt, Mukesh H. Koladiya, Rakesh A. Poptani, Ajay K. Gohel, Bhagirath R. Paradva, Vivek U. Chauhan

**Project Duration** : September 2023 – July 2024

#### Project Description

Biological Diversity Act, 2002 mandates to set up a Biodiversity Management Committee (BMC) in every gram panchayat of the country. Committee consists of one Chairperson, six members as 1/3rd of the designated women, SC/ST reservation as per state demography. The committee primarily work on documentation of local biodiversity in the form of People Biodiversity Register (PBR).

The Gujarat Institute of Desert Ecology have been empaneled as Technical Support Group (TSG) for PBR preparation of Tankara and Tankara taluka for Morbi District and allotted 20 BMCs for the preparation of PBR. The first phase field (PRA exercise, training to BMC members) have been completed and submitted to GBB. The draft PBR reports have been submitted to Gujarat Biodiversity Board.



### 16. Preparation of People's Biodiversity Register for 25 BMCs of Kachchh District

**Funding Agency** : Gujarat Biodiversity Board, Gandhinagar, Gujarat.

**Project Team** : Jayesh B. Bhatt, Mukesh H. Koladiya, Ajay K. Gohel, Bhagirath R. Paradva, Vivek U. Chauhan. Viral D. Vadodariya, Rakesh A. Poptani

**Project Duration** : September 2023 – July 2024

#### Project Description

Gujarat Institute of Desert Ecology have been empaneled as Technical Support Group (TSG) for PBR preparation of Bhuj and Mundra Taluka under Kachchh District and allotted 25 BMCs for the preparation of PBR. The training for BMC members for preparing PBR and first phase data collection of such as PRA exercise, training to BMC members and Seasonal data collection of flora/fauna, agriculture, livestock and village profile have been completed in the 25 villages (15 villages of Bhuj and 10 villages of Mundra Taluka). The first phase documents and draft PBR report have been submitted to Gujarat Biodiversity Board.





### 17. Preparation of People's Biodiversity Register for 15 BMCs of Patan District

Funding Agency : Gujarat Biodiversity Board, Gandhinagar, Gujarat

Project Team : Jayesh B. Bhatt, Vivek U. Chauhan, Ajay K. Gohel, Bhagirath R. Paradva, Viral D. Vadodariya, Rakesh A. Poptani

Project Duration : September 2023 – July 2024

#### Project Description

Gujarat Institute of Desert Ecology have been empaneled as Technical Support Group (TSG) for PBR preparation of Sami and Patan Taluka under Patan District and allotted 15 BMCs for the preparation of PBR. The training for BMC members for preparing PBR and first phase data collection of such as PRA exercise, training to BMC members and Seasonal data collection of flora/fauna, agriculture, livestock and village profile have been completed in the 15 villages (10 villages of Sami and 5 villages of Patan Taluka). The first phase documents and draft PBR report have been submitted to Gujarat Biodiversity Board.



### 18. Technical Support for Greenbelt Development at AMNS Ltd. Hazira

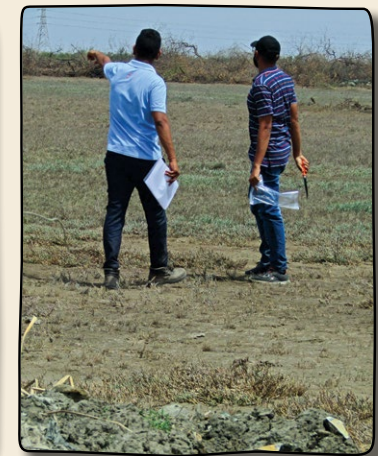
Funding Agency : AMNS Ltd. Hazira

Project Team : Jayesh B. Bhatt, K. Karthikeyan, Vivek U. Chauhan

Project Duration : February 2024 – July 2024

#### Project Description

Gujarat Institute of Desert Ecology have been allotted to a project to provide Technical Support for Greenbelt Development at AMNS Ltd. Hazira. The identified site of AMNS Ltd. have been visited and surveyed. The soil samples from different locations have also been collected for further analysis. The area is highly saline with patches of *Neltuma juliflora* and *Salvadora persica*. Few halophytes such as *Aeluropus lagopoides*, *Urochondra setulosa*, *Suaeda nudiflora*, *Salsola barryosma* etc. have also been observed during the survey. The suitable plants appropriate to the soil conditions for the greenbelt development have been identified.





## 19. Conservation and Sustainable Livelihood through Appropriate Technological Interventions in villages around Marine National Park Gujarat

**Funding Agency :** Department of Science and Technology,  
New Delhi

**Project Team :** Jayesh B. Bhatt, Durgaprasad Behera,  
Bhagvati Kannad, Pradeep Baraiya

**Project Duration :** February 2022 – March 2025

### Project Description

The GoK-MNP is well known for the presence of diversity of coral species. It is more sensitive towards abiotic factors such as temperature and turbidity, making coral a good indicator for ecosystem health. Mangroves and other habitats provide feeding and nesting sites for many birds including the threatened species. Due to environmental protection act and governmental restrictions, the community intervention in its protected area is restricted. We provided them an alternative livelihood activity such as seaweed cultivation, pisciculture and tourism activity for them as source of income and alternatively reduce pressure on marine national park. Socio economic data for four selected villages have been collected. Training and demonstration for seaweed cultivation have been completed. Fifty seaweed rafts have been allocated to 25 beneficiaries of Arambhada village. The training programs for trainers have been conducted at Khijadiya Bird Sanctuary as a part of the project activities. An Audio-visual talk on Marine biodiversity conservation and its importance have also been organised at two schools in Hamusar and Poshitra village to generate awareness among school students. Poly culture activity is under progress.





## PROJECT HIGHLIGHTS

### COASTAL AND MARINE ECOLOGY DIVISION – COMPLETED PROJECTS

#### 1. Study on the Impact of Gopalpur LNG Terminal on Migratory Avifauna, Coastal Ecology and Biodiversity in and Around Proposed LNG terminal at Gopalpur port Odisha, and Preparation of Biodiversity Management Plan

Funding Agency : Petronet LNG

Project Team : Durga Prasad Behera, Kapilkumar Ingle, S. K. Sajan, Nikunj Gajera, Balaji Prasath, Dhara Dixit, Mukesh H. Koladiya, Bhagirath R. Paradva, Viral D. Vadodariya, Rakesh A. Poptani, Kaksha Soni

Project Duration : April 2022 - March 2023

#### Project Description

The objective of the project is to Assess the status and diversity of migratory birds within the identified core and the 10km buffer zones of the terrestrial and marine environment. The study included the assessment of the various biotic components of the intertidal macro and meio-fauna, phytoplankton, zooplankton, sub tidal benthos and fisheries population. Preparation of terrestrial, marine and coastal biodiversity management plan including the sand dunes within the 10 km buffer of the study area has been undertaken based on the findings. A total of 103 species of birds, representing 81 genera, and 40 families were recorded within the periphery of the study area. The percentage composition of the avifauna in the various habitats revealed that there were representatives of Wetland (27%), Mixed Forest (16%), Pandanus mixed forest (16 %), Agriculture land (16%), Cashew Mix Forest (15%) and Sea shore (10%). Totally, 7

groups of meiofauna viz., *Foraminifera*, *Turbellaria*, *Nematoda*, *Polychaeta*, *Harpacticoida*, *Isopoda* and *Amphipoda* were encountered in the intertidal sandy habitat of Gopalpur coastal area. The total number of phytoplankton genera varied from 13 to 26 number and 19 to 22 zooplankton genera during the post and Premonsoon seasons.





## PROJECT HIGHLIGHTS

### COASTAL AND MARINE ECOLOGY DIVISION – ONGOING PROJECTS

#### 2. Regular Monitoring of Marine Ecology in and around the Deendayal Port Authority and Continuous Monitoring Programme

**Funding Agency :** Deendayal Port Authority, Kandla

**Project Team :** Durga Prasad Behera, Kapilkumar Ingle, L. Prabhadevi, Dhara Dixit, Viral D. Vadodariya, Dayesh Parmar, Mukesh H. Koladiya, Pallavi Joshi, Deep Dudiya, Muskan Karamchandani

**Project Duration :** May 2023 – May 2024

#### Project Description

Deendayal Port Authority intends to develop 7 integrated facilities (100 ha) in addition to the development of 3 integrated facilities (Stage-I) within the existing Deendayal Port Authority. After the completion of the regular monitoring project 2018 to 2021, sanction has been accorded further for the period 2021 to 2024. The developmental activities will have their own environmental impacts. The Ministry of Environment, Forest, and Climate Change (MoEF & CC) has directed the port authorities to conduct “Regular Monitoring of Marine Ecology in and around the Deendayal Port Trust and Continuous Monitoring Programme” to record the current status and conserve its fragile environment through an appropriate management plan. The study recorded moderate subtidal and intertidal biodiversity in the port area over three seasons (May 2023 to May 2024) by adopting different standard methodologies. Comprehensive qualitative and quantitative assessments of intertidal fauna were conducted, focusing on their composition, distribution,

diversity, density, and other characteristics. This included meticulous data collection on species of benthic fauna and planktons. The mangrove ecosystems were assessed for their density and growth characteristics, providing valuable insights into the health and development of these crucial coastal forests. Furthermore, water and sediment samples, including those from mudflats, were studied to evaluate various physico-chemical parameters. The study also documented the occurrence, diversity, and distribution of halophytes, seagrasses, seaweeds, and other coastal flora and fauna, highlighting the rich biodiversity present in these ecosystems. Additionally, the investigation extended to avifaunal diversity, recording the density, composition, and habitat preferences of the birds. Special attention was given to identifying threatened and endangered species, ensuring that conservation efforts could be appropriately directed. These comprehensive assessments offer a holistic view of the ecological health and biodiversity of the marine and coastal environments of the port. A detailed management plan was also prepared for the restoration and sustenance of the species diversity and water and soil characteristics of the port and the coastal ecosystem.



## PROJECT HIGHLIGHTS

### NATURAL RESOURCES MANAGEMENT DIVISION – COMPLETED PROJECTS

#### 1. End Line Evaluation of PMKSY-WC of Batch-IV (22 Projects) of the Gujarat State Watershed Management Agency

**Funding Agency :** Gujarat State Watershed Management Agency (GSWMA), Gandhinagar

**Project Team :** Prakash M. Patel, Nikunj B. Gajera, Jayesh B. Bhatt, Bhagirath R. Paradva, Viral D. Vadodariya, Dayesh M. Parmar, Ajay K. Gohel, Rakesh A. Poptani, Mukesh H. Koladiya, Geeta Goswami

**Project Duration :** September 2022- January 2024

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) has been formulated with the vision of extending the coverage of irrigation 'Har Khetkopani' (HKKP) and improving water use efficiency 'More crop per drop' in a focused manner with end-to-end solution on source creation, distribution, management, field application and extension activities. Under the PMKSY, Integrated Watershed Management Programmes (IWMP) has been initiated and implemented at various districts of the Gujarat state under different phases. For the completed projects, an endline evaluation is a prerequisite to assess the success of the projects and its impact of achieving water security for irrigation, soil quality, crop productivity, fodder development, environment and ecology, livelihood development, employment, quality of life, etc, in the project area. As the project under Batch-IV has been completed, GSWMA has identified GUIDE as one of the agencies for end line evaluation and

sanctioned 22 watershed projects located in 10 districts of Gujarat. Total 22 project areas have been surveyed and assessed the three important impact indicators viz. 1) Household level Impact 2) Community level Impact 3) Watershed Level Impacts. The results highlighted positive level changes in the livelihood and project environment. The final reports were submitted to GSWMA, Gandhinagar.





## PROJECT HIGHLIGHTS

### NATURAL RESOURCES MANAGEMENT DIVISION – ONGOING PROJECTS

#### 2. Integrated Watershed Management Programme (IWMP)-49

**Funding Agency** : Gujarat State Watershed Management Agency (GSWMA), Gandhinagar

**Project Team** : Prakash M. Patel, Geeta Goswami, Amit Ghodasara, Jayrajsinh Mori

**Project Duration** : 2019 - 2025

The watershed project (IWDP-49) was sanctioned by the DWDU, Bhuj-Kachchh during April 2019. The project villages include Bayath, Changdai, Bambhadai and Mapar covering an area of 6042.60 Ha in Mandvi taluka of the Kachchh district. These villages are located along the fringes of the Coastal belt of Mandvi, Kachchh. Major problems of the project area include degraded lands, climatic constraints, poor soil fertility, soil erosion, poor vegetative cover, water crises, salinization of soil and water resulting into land degradation and poor productivity. The integrated project aims at improving the land status through various soils, water, and other site-specific amendments, thereby improving the socio-economic status of the villagers. Though the project was sanctioned in 2019, the activities are commenced since late 2021. The following activities had been undertaken in the project villages till date.

The PRA exercise, village and Gram Sabha meetings and baseline survey were completed. With the above, the Detailed Project Report was prepared and submitted to the DWDU, Bhuj. Further, registration of 3 village committees was also completed. The Entry Point Activities are in process.





### 3. Training of IWMP Projects in Kachchh

Funding Agency : Gujarat State Watershed Management Agency (GSWMA), Gandhinagar

Project Team : Prakash M. Patel, Geeta Goswami, Amit Ghodasara

Project Duration : April 2022 - March 2025

#### Project Description

Integrated Watershed Management Programme (IWMP) is a modified programme of erstwhile Drought Prone Areas Programme (DPAP), Desert Development Programme (DDP) and Integrated Wastelands Development Programme (IWDP) of the Department of Land Resources, Ministry of Rural Development, GoI, New Delhi. The main objectives of the IWMP are to restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil and vegetative cover. Gujarat State Watershed Management Agency (GSWMA) under the Commissionerate of Rural Development has sanctioned watershed Training projects to GUIDE in the Kachchh district. Total 960 Farmers, Self Help Groups (770 members for leadership training and 649 members for basic training) and 230 members of the Village Watershed Committees (VWC) were given training on watershed programmes including Detailed Project Report (DPR) and rules and regulations of GSWMA.







## PROJECT HIGHLIGHTS

### ENVIRONMENTAL MONITORING AND ASSESSMENT DIVISION - COMPLETED PROJECTS

#### 1. Regional Strategic Impact Assessment for Deendayal Port Region

**Funding Agency** : Deendayal Port Authority (DPA), Kandla, Gujarat

**Project Team** : K. Karthikeyan, Rachna Chandra, Nikunj B. Gajera, Arunkumar Roy Mahato, Pratik D. Sengani, Jayesh B. Bhatt, Dayesh M. Parmar, Mukesh H. Koladiya, Rakesh Poptani, Bhagirath Paradva, Ajay K. Gohel, Viral D. Vadodariya, Arjan Rabari, Hiren Chavda

**Project Duration** : September 2017 - January 2024

Deendayal Port in Kachchh District Gujarat State (formerly Kandla Port) operated by Deendayal Port Authority (DPA), is a port gateway to the west and northern Indian hinterland in western and northern states of India. It is one of India's 12 major ports located at 23° 1 'N latitude; 70° 13' E longitude on Kandla creek in the inner part of Kachchh Gulf. DPA has proposed to construct 07 integrated facilities (Stage-I) within the existing port facilities. The Regional Strategic Impact Assessment (RSIA) is conducted based on strategic consideration to devise a regional development policy framework. Such a strategic approach had the main purpose of achieving an environmental regulatory regime in line with the long-term goals of sustainable development in the region.



## PROJECT HIGHLIGHTS

### ENVIRONMENTAL MONITORING AND ASSESSMENT DIVISION - ONGOING PROJECTS

#### 2. Marine Environmental Monitoring Studies at Single Buoy Mooring (SBM), Jetty and Inter-Tidal Locations of Nayara Energy Limited, Vadinar, Gujarat

Funding Agency : Nayara Energy Ltd. (Formerly ESSAR Oil Ltd.),  
Jamnagar

Project Team : K. Karthikeyan, G. Jayanthi,  
Krushnakant D. Baxi, Hirji. K. Dangar,  
Monika. R. Sharma, Dipti L. Parmar

Project Duration : February 2022 - January 2025

#### Project description

In order to facilitate the supply of crude oil to the refinery, Essar Oil Refinery had established a marine terminal termed as Vadinar Oil Terminal Limited (VOTL) comprising SBM, product berths, pipelines etc. The Marine Terminal's entire marine operations are executed via VOTL located at Vadinar. To monitor Vadinar's Marine environment, VOTL has given GUIDE the task of monitoring and evaluating the marine ecological status of the environment at critical locations in and around the terminal and its offshore facilities. In this regard, GUIDE was entrusted with tenth consecutive year of monthly monitoring of selected area in Vadinar coastal belt.





### 3. Environmental Audit and Management System Adequacy for Schedule-I Industries

**Funding Agency :** Industries (As per GPCB guidelines)

**Project Team :** K. Karthikeyan, Ratansi M. Chaudhary, Ruturajsinh Sarvaiya, Hirji K. Dangar

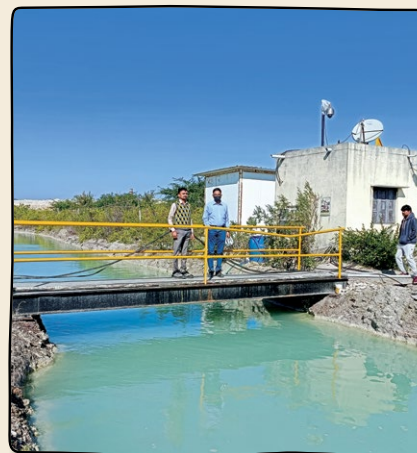
**Project Duration :** January 2015 - December 2024

In 1996, the Hon'ble High Court of Gujarat in their verdict directed the Gujarat Pollution Control Board (GPCB) for implementation of an Environmental Audit Scheme for the industries in the State of Gujarat. Hon'ble High Court directed to have qualified technical professionals who can become a link between the individual industries on the one hand and the GPCB and other public authorities as well as the association of industries on the other hand, with the added vital elements of accountability and transparency. This scheme is to be supervised by the GPCB and implemented effectively. The Court also directed GPCB to prepare a format of audit report to be submitted by the auditors.

Gujarat Institute of Desert Ecology is recognized as a Schedule-1 Environmental Auditor by the Gujarat Pollution Control Board (GPCB), Gandhinagar since January 2015 to conduct an Environmental Audit of Industries in Gujarat. Environmental Audit is basically a management tool which comprises of an organized evaluation procedure for performing the Environmental Management protocols in an industrial setup in order to ensure waste prevention, waste reduction and to maintain other regulatory compliances. The major task of the Environmental Auditors is to monitor and evaluate the Environmental Management System (EMS), suggest, and recommend necessary improvement of EMS in the industries and informing all these activities in the public domain. With the above-mentioned

objectives, this scheme is being functional since the last 10 years being implemented by GPCB through various Recognized Environmental auditors (Schedule - I and II).

GUIDE is one among the 42 Schedule-I Auditors in the state. Environmental audits are undertaken on a seasonal basis, i.e., monitoring, Water, Wastewater, STP and trade effluent analysis, Hazardous waste characterization and Noise monitoring. The audit work intends to gather information on the industrial processes adopted by the system. During the financial year 2021-22, a total of 14 industries have been allotted to GUIDE based on XGN random allotment by GPCB.



#### 4. Studies on Dredged Materials for the Presence of Contaminants and Suggesting Suitable Disposal Options (as per EC & CRZ Clearance Accorded by the MOEF & CC, GOI Dated 19/12/2016 - Specific Condition No. VII)

Funding Agency : Deendayal Port Authority, Gandhidham, Gujarat

Project Team : K. Karthikeyan, G. Jayanthi, Krushnakant D. Baxi, Hirji. K. Dangar, Monika. R. Sharma, Dipti L. Parmar

Project Duration : November 2021 - October 2024

##### Project Description

Deendayal Port Authority intends to develop seven integrated facilities to meet the increasing cargo handling demands of the port. The Ministry of Environment, Forests and Climate Change (MoEF & CC), New Delhi, while according environmental clearance to these developmental initiatives, among other conditions, stipulated to carry out “Studies on dredged materials for the presence of contaminants” as per the EC & CRZ Clearance accorded by the MoEF & CC, GoI dated 19/12/2016, Specific Condition No. vii and the task of carrying out the study was given to Gujarat Institute of Desert Ecology (GUIDE), Bhuj during September 2017 and the study encompasses a detailed study of various physical, chemical and biological characteristics of the sediment. This study contemplates the evaluation of the physico-chemical characteristics of dredged materials in dumped locations as outlined by “The Central Water and Power Research Station (CWPRS), Pune”.

Based on the results observed during the present study, long-term Maintenance Dredging Management Plan (LMDMP) has been

suggested to understand the status of responsibilities for managing natural sediment accumulation at the Port, in a way that ensures the safe and efficient operation of the Port and the protection of environmental values.





## 5. Assessment of Water Quality in Gulf of Kachchh and Gulf of Khambhat

**Funding Agency** : Ministry of Earth Sciences (through National Centre for Coastal Research, Chennai)

**Project Team** : . Karthikeyan, G. Jayanthi, L. Prabhadevi, Krushnakant D. Baxi, Neetu Mohan

**Project Duration** : August 2022 - July 2026

In India, Gujarat has the longest coastline of around 1,600 km. It is broadly classified into five regions Rann of Kachchh, Saurashtra coast, Gulf of Kutch, Gulf of Khambhat and South Gujarat coast. Seawater resources constitutes one of the major natural water resources that are under the threat of over-exploitation and pollution caused by anthropogenic activities. Seawater quality changes with time and space because of its effect on human and aquatic ecosystems particularly marine life. Thus, it is very necessary to have seawater quality monitoring and assessment for effective water quality management. Physiochemical monitoring is done for better understanding of the changes happening in coastal areas. Water quality parameters such as pH, salinity, micro and macro nutrients, dissolved oxygen and temperature significantly affect the water environment. The distributions of flora and fauna in marine systems are mainly controlled by the physical and chemical characteristics of the water body. Coastal regions between Okha to Bhavnagar and Surat is a hub for mega industries like textile, cement, chemicals, soda power plant, fertilizer, and supportive industries. This coastline is also known for its rich biodiversity. Therefore, it is important to monitor the various physio-chemical parameters as a preliminary step for the assessment of pollutants and their impact on the

seawater quality. The Seawater Quality Monitoring Program (SWQM) was established as the Coastal Monitoring and Prediction of Seawater (COMAPS) by the MoES in 1990. The main objective of the program was to periodically assess the coastal water quality. The SWQM program monitors and assesses the coastal water quality through collection of physical, chemical, and biological samples. In this context, the present study was carried out to monitor and compare physiochemical, biological, and microbiological parameters of the coastal regions such as Kandla of Gulf of Kutch and Hazira of Gulf of Khambhat, Gujarat, India.





## 6. Environmental Audit of Deendayal Port Authority, Kandla, Gujarat

**Funding Agency :** Deendayal Port Authority, Kandla

**Project Team :** K. Karthikeyan, Ratansi. M. Chaudhary, Ruturajsinh Sarvaiya, Hirji. K. Dangar

**Project Duration :** July 2023 - June 2024

### Project Description:

Gujarat Pollution Control Board (GPCB) as directed by Hon'ble High Court of Gujarat in their verdict in 1996 directed for implementation of Environmental Audit Scheme for the industries in the State of Gujarat. Hon'ble High Court directed to have qualified technical professionals who can become a link between the individual industries on one hand and the GPCB and other public authorities as well as association of industries on the other hand, with the added vital elements of accountability and transparency. This scheme is to be supervised by the GPCB and implemented effectively. The Court also directed GPCB to prepare a format of audit report to be submitted by the auditors.

Gujarat Institute of Desert Ecology is recognized as Schedule-1 Environmental Auditor by Gujarat Pollution Control Board (GPCB), Gandhinagar since January 2015 to conduct Environmental Audit of Industries in Gujarat. Environmental Audit is basically a management tool which comprises of an organized evaluation procedure for performing the Environmental Management protocols in an industrial setup to ensure waste prevention, waste reduction and to maintain other regulatory compliances. The major task of the Environmental Auditors is to monitor and evaluate the Environmental Management System (EMS), suggest, and recommend necessary improvement of

EMS in the industries and informing all these activities in the public domain.

In this regard, Deendayal Port Authority has entrusted GUIDE to undertake Environmental Audit on a seasonal basis, i.e., Monitoring of Ambient Air, Water, Marine water, Noise monitoring etc. The audit work intends to gather information on the industrial processes adopted by the system. During the financial year 2023-24, a full-fledged Environmental Audit was conducted and the report was submitted to Deendayal Port Authority.





## 7. Lake Water Quality Monitoring with Special Reference to Primary Productivity, Planktonic Community Structure and Microbial Contamination

Funding Agency : Go Green Mechanisms Private Limited,  
Ahmedabad

Project Team : K. Karthikeyan, Krushnakant D. Baxi,  
Dipti L. Parmar

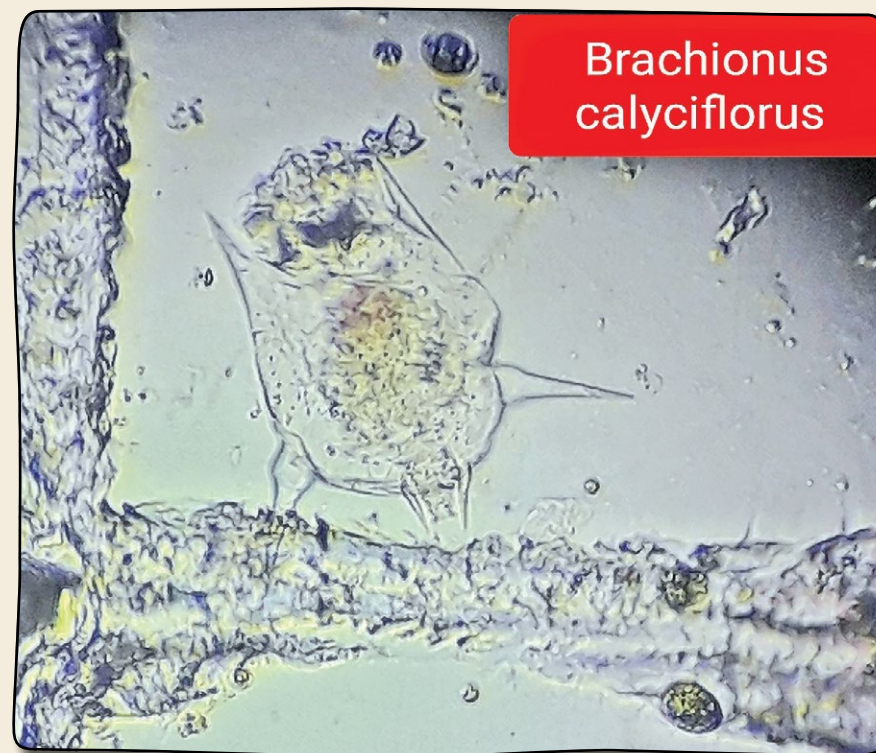
Project Duration : April 2022- March 2023

### Project Description

Go Green Mechanisms Pvt. Ltd, having its registered office at Dayal Estate National Highway, Jetalpur, Dist. Ahmedabad- 382426 (Gujarat), GGMPPL intends to utilize the services of GUIDE for services related to Marine biological and microbiological component for water analysis.

Phytoplankton and zooplankton in general retort rapidly to any alterations in nutrient changes in water bodies indicating the growing nutrient pollution and effects caused by pollutants on aquatic life. Any reduction in biotic diversity can be easily understood by analyzing phytoplankton and thus it is very essential to estimate the levels of plankton in pond/lake samples which in turn indicate the water quality. In addition, total coliform bacteria are usually found in the environment and are in general inoffensive. Fecal coliform are also a sub-group of coliform bacteria appearing in great quantities in the intestines and feces of human and animals and the presence of such forms in a water sample indicates fecal contamination, which confirms that there is a greater risk. Considering these aspects, the present study was aimed to determine the ecological quality of lake water by analyzing primary productivity and the biological and

microbiological features. Seasonal fluctuations during the analysis have been noticed and based on that recommendations are given for the management of lakes.





## 8. Training on Medicinal Mushroom, *Cordyceps militaris*

Funding Agency : In-house project of GUIDE

Project Team : G. Jayanthi, Monika. R. Sharma,  
K. Karthikeyan, V. Vijay Kumar

Project Duration : April 2023 - March 2024

### Project Description

In line with the expansion of *Cordyceps militaris* research and training initiatives, laboratory experiments on *Cordyceps militaris* cultivation (2020-21) and subsequent anti-tumor studies in animal models significantly expanded the research activities. The comprehensive approach encompassed both experimental research and practical knowledge dissemination.

During this period (2023-2024), we successfully implemented five specialized training programs, reaching 11 participants from diverse backgrounds. The impact of these programs has been particularly noteworthy, with ten participants successfully establishing medicinal mushroom cultivation operations across multiple states, including Tamil Nadu, Maharashtra, Gujarat, and Karnataka. This demonstrates the widespread adoption and practical application of our training initiatives.

Concurrent with the training efforts, the research team at GUIDE continues to conduct detailed analyses of *Cordyceps militaris* extracts, investigating their various biological activities. These ongoing studies aim to further our understanding of this valuable medicinal mushroom's properties and potential applications. The synergy between research activities and training programs has created a robust framework for both scientific advancement and

practical implementation in the field of medicinal mushroom cultivation.







## 9. Training on edible Oyster mushroom cultivation

Funding Agency : In-house project of GUIDE

Project Team : G. Jayanthi, Monika. R. Sharma,  
K. Karthikeyan, V. Vijay Kumar

Project Duration : April 2023 - March 2024

### Project Description

During the 2023-24, an extensive series of training initiatives focused on oyster mushroom cultivation was conducted. A comprehensive training program was implemented, by which both theoretical knowledge and hands-on practical sessions were delivered, and thorough expertise in commercial cultivation techniques was ensured to be gained by participants.

Four structured training sessions were successfully delivered, by which a total of 7 participants from various backgrounds were benefited. This program's effectiveness in promoting entrepreneurship was demonstrated. Essential aspects including substrate preparation, spawning techniques, pest control, and post-harvest handling were covered in the training curriculum. Specialized instruction in value-addition techniques and marketing strategies was also received by participants, whereby sustainable business models could be developed.





## PROJECT HIGHLIGHTS

### REMOTE SENSING AND GIS CELL – COMPLETED PROJECTS

#### 1. Land Use /Land Cover and Ecological Assessment of Un-Surveyed Land, Tragadi Panchayat, Mandvi Taluka by Using Satellite Imageries of the Site Assigned by EECPL, Mandvi, Kachchh District, Gujarat

Funding Agency : Environmental Engineers & Consultants Pvt. Ltd., New Delhi

Project Team : Dayesh Parmar, Durga Prasad Behera, Kapilkumar Ingle, K. Karthikeyan, Deep Dudiya

Project Duration : December 2023 - February 2024

The study area is located at Tragadi village on southern part of Mandvi taluka along the Modhva coast in the Kachchh District of Gujarat. The study site falls under the extent of co-ordinates; 22°48'30"N, 69°27'00"E; to 22°45'00"N, 69°29'00"E; encompasses an approximate area of 784 ha. The present study was undertaken to provide the outcome of the Ecological survey of the 784 Ha of un-surveyed land at the Tragadi Village, Tragadi Panchayat of Mandvi Taluka, in Kachchh district, Gujarat and the mapping of the different levels of classification of the CRZ indicating the sub divisions with relevant entities as per the CRZ, 2019 notification.

The mangrove ecosystem within the study area encompasses an area of approximately 11 Ha. This vegetative cover is predominantly fragmented, scattered patches situated along the creeks in the northern sector of the area under study.





## 2. Monitoring and Distribution of the Mangroves Along the Creeks in and Around APSEZ, Mundra, Kachchh, Gujarat

Funding Agency : Adani Ports and Special Economic Zone Ltd. (APSEZL)

Project Team : Dayesh Parmar, Kapilkumar Ingle, Deep Dudiya, Raj Joshi, Arjan Rabari

Project Duration : January 2023 - December 2024

### Project Description

In view of the existing port and expansion, Adani Ports and Special Economic Zone Ltd. (APSEZL) has approached M/s. Gujarat Institute of Desert Ecology (GUIDE) to conduct a detailed study of the mangrove coverage using the satellite images of 2021 and the changes in the mangrove areas of APSEZ between 2019 and 2021. To comply with the above recommendations relating to monitoring of mangrove, the plant distribution in the creeks in and around APSEZL, Mundra, Gujarat with the following objectives.

- To map the current extent of mangrove cover and its changes in comparison to 2021 data, through GIS and RS in the APSEZ area.
- To assess and monitor the changes in the mangrove cover between 2019 and 2021 by using RS and GIS in the APSEZ area.

The distribution of mangroves in the creeks in and around APSEZ was analysed using satellite images from March 2019 and March 2021. The major findings are:

The mangrove cover in the study area has increased by 52.79 ha from 2019 to 2021, indicating that the mangrove ecosystem and the tidal regime were not adversely affected during this period.



## PROJECT HIGHLIGHTS

### REMOTE SENSING AND GIS CELL – ONGOING PROJECTS

#### 3. Mangrove Mapping through Satellite Imagery

Funding Agency : AMNS Ports Hazira Limited

Project Team : Dayesh Parmar, Kapilkumar Ingle,  
Deep Dudiya, Arjan Rabari

Project Duration : February 2024 - July 2024

#### Project Description

AMNS Ports Hazira Limited (formerly known as, Essar Bulk Terminal Limited) to study the mangrove area through satellite imagery on a yearly basis. In addition, formulation of a management plan for conservation of the mangrove ecosystem through scientific investigation was also recommended. Therefore, APHL Limited has approached M/s. Gujarat Institute of Desert Ecology (GUIDE) to study the long-term temporal mangrove cover changes in the surroundings of APHL through satellite imagery (LISS-IV). The present report mainly emphasizes the status and changes in mangrove cover and its ecological significance.

During this study it was observed that present mangrove area has increased from 13.89 ha during the year 2014 to 78.06 ha in the year 2023. The presence of regular tidal water flushes in this area enhances mangrove survival and recruitment. Tidal flushing helps maintain suitable soil conditions and nutrient availability and extended periods of submergence and moisture for mangrove growth.





## GUIDE'S COLLABORATIONS (Past and Present)

### MoU / International Collaborations

- Blaustein Institute for Desert Research (BIDR), Israel
- Institute of Development Studies, University of Sussex, Brighton, UK
- Massey University, North Palmerston, New Zealand
- Norwegian University of Life Sciences, Norway
- The University of Greenwich, London, UK
- Le Centre National De La Recherche Scientifique (CNRS) and Centre d'Ecologie Fonctionnelle et Evolutive (CEFE), Montpellier, France
- Centre for Advanced Study in India (CASII), Bhuj, Gujarat
- CSIR - National Environmental Engineering Research Institute (NEERI), Nagpur, Maharashtra
- CSIR - National Geophysical Research Institute (NGRI), Hyderabad
- Gujarat Environmental Management Institute (GEMI), Gandhinagar, Gujarat
- Gujarat National Law University, Gandhinagar, Gujarat
- Institute of Science and Technology for Advanced Study and Research (ISTAR), S.P. University, Vallabh Vidyanagar, Gujarat

### MoU / National Collaborations

- Institute of Trans-Disciplinary Health Sciences and Technology (ITDHST), Trans Disciplinary University (TDU), Bengaluru
- S.P. University, Anand, Gujarat
- Indomer Coastal Hydraulics Private Limited., Chennai
- ICAR-Central Institute for Brackish Water Aquaculture (CIBA), Chennai
- The Centre of Advanced Study in Marine Biology, Annamalai University, Chidambaram, Tamil Nadu
- C.C. Shroff Research Institute, Mandvi – Kachchh, Gujarat
- Central Arid Zone Research Institute (CAZRI), Jodhpur, Rajasthan
- Central University of Rajasthan (CURAJ), Ajmer, Rajasthan
- K.S.K.V. Kachchh University, Bhuj-Kachchh, Gujarat
- Knowledge Consortium of Gujarat (KCG), Gandhinagar, Gujarat
- Pandit Deendayal Energy University -PDEU (Formerly PDP), Gandhinagar, Gujarat
- SANDHAN, Gandhinagar, Gujarat
- Network for Certification and Conservation of Forests (NCCF)
- GSFC University, Vadodara.
- Nirma University, Ahmedabad.
- Gujarat Industries Power Company Ltd., Vadodara.



## INTERNATIONAL, NATIONAL MEMBERSHIPS AND RECOGNITIONS (Past and Present)

GUIDE is an active member in several national and international programmes in the area of climate change, biodiversity conservation, combating desertification, etc. Additionally, GUIDE has recognitions at various levels with many organizations and has been recognized in many fields.

### Memberships

- Global Network of Dryland Research Institutes (GNDRI), Israel
- International Society of Zoological Sciences (ISZS), China
- International Union for Conservation of Nature (IUCN), Switzerland
- Ocean Expert, Intergovernmental Oceanographic Commission of UNESCO
- International Hydrological Programme (IHP)
- Eco sensitive International Hydrological Programme (IHP)

### Committees

- District Environment Impact Assessment Authority (DEIAA), Kachchh
- Eco-sensitive zone committee of Girnar Wildlife Sanctuary, Junagadh
- Eco-sensitive zone committee of Marine National Park and Sanctuary, Jamnagar
- Eco-sensitive zone committee of Kutch Bustard Sanctuary
- Eco-sensitive zone committee of Narayan Sarovar Sanctuary
- District Expert Appraisal Committee (DEAC), Kachchh.
- Chhari-Dhand Conservation Reserve Management Committee, Kachchh.

### Recognitions

- GUIDE is an Expert Organization on 'Combating Desertification' recognized by the ENVIS Centre on Combating Desertification, hosted by CAZRI and sponsored by MoEF & CC, Govt. of India, New Delhi.
- GUIDE is recognized as Environmental Auditors for Schedule - I Industries of Gujarat by the Gujarat Pollution Control Board (GPCB), Gandhinagar.
- GUIDE is recognized as Scientific and Industrial Research Organization (SIRO) by the Department of Science and Technology (DST), Govt. of India, New Delhi.
- GUIDE laboratory was recognized as State Air & State Water Laboratory by the Gujarat Pollution Control Board (GPCB), Government of Gujarat, Gandhinagar.
- Education and Research Institute by the K.S.K.V. Kachchh University, Bhuj.

### Accreditation

- National Accreditation Board for Education and Training (NABET), Quality council of India (2014-2019).
- National Accreditation Board for Testing and Calibration Laboratories (NABL), Quality council of India in the field of chemical testing as per ISO/IEC 17025:2005 (February 2019- February 2022).

### Awards

- Kutch Ratna Award for Environment by K.S.K.V. Kachchh University, Bhuj, Gujarat
- National Education Leadership Award by Dainik Bhaskar, Mumbai



## Consultancy Services provided by Environmental Monitoring and Assessment Division

1. AMI Pure Water Suppliers, Bhuj-Kachchh, Gujarat
2. ARAC International LLP, Bhuj, Kachchh, Gujarat
3. ASHAPURA PERFOCLAY LTD., Kachchh, Gujarat
4. Border Security Force, Bhuj-Kachchh, Gujarat
5. Chief Conservator of Forests (Kutch Circle), Bhuj, Kachchh, Gujarat
6. Clear Bleach LLP, Bhuj, Kachchh, Gujarat
7. Cube Contraction Engineering Limited, Vadodara, Gujarat
8. Davda Shikhand & Sweets, Bhuj-Kachchh, Gujarat
9. Dayapar Forest Department
10. Department of Chemistry, KSKV Kachchh University, Bhuj, Kachchh, Gujarat
11. Department of Life Science, M. K. Bhavnagar University, Bhavnagar, Gujarat
12. Department of Pharmaceutical Science, Saurashtra University
13. Dept. of Earth and Env. Science, KSKV Kachchh University, Bhuj-Kachchh, Gujarat.
14. District Rural Development Agency, Bhuj-Kachchh, Gujarat
15. Forest Officer, Dayapar North, Dist: Kachchh, Gujarat
16. Gau Prakrutik Keduth Sangatan, Mandvi, Kachchh, Gujarat
17. Go Green Mechanisms Pvt.Ltd.
18. Gujarat Mineral Development Corporation, Kachchh, Gujarat
19. Gujarat Pollution Control Board, Bhuj-Kachchh, Gujarat
20. Himanshu Cooling Centre, Ahmedabad, Gujarat
21. Innovation & Knowledge Centre, Ashapura Group of Industries, Bhuj-Kachchh, Gujarat
22. Krishna Corp India Pvt Ltd, Ahmedabad
23. Mihir And Company, Gandhidham, Gujarat
24. Odhavram Developers, Bhuj-Kachchh, Gujarat
25. Satyesh Brinecham Pvt Ltd., Ahmedabad, Gujarat
26. Shree Tulsi Enterprise, Kachchh, Gujarat
27. Sumitomo Chemical India Limited, Bhuj-Kachchh, Gujarat
28. The Fern Residency, Bhuj, Gujarat
29. Venus Pipes and Tubes, Kachchh, Gujarat



## PUBLICATIONS

### Research Papers

- Govind Sanjeev Kumar, L., Thirumalaikumarasamy, D., Karthikeyan, K., Mathanbabu, M. and Sonar, T. (2023). Optimization of process parameters for minimizing porosity level and maximizing hardness of AA2024 alloy coating on AZ31B alloy using computational response surface methodology. *International Journal on Interactive Design and Manufacturing (Springer)* Accepted. (IF -2.1).
- Govind Sanjeev Kumar, L., Thirumalaikumarasamy, D., Karthikeyan, K., Mathanbabu M., and Dhinakaran V. (2023). Post Treatments of Pulse Electro Deposition Coatings on Magnesium Alloys: A Review. *Materials today Proceedings* (Elsevier). 78 (3), 700-707.
- Sharma, M. R., Pomal, I. M., Sorathia, K. D., Jayanthi, G., Karthikeyan K. (2023). Isolation and Screening of Plant growth promoting rhizobacteria from agricultural soils of semi-arid Kachchh district, Gujarat, Western India. *Ecology, Environment & Conservation*, 30. Pp S240-S246 (UGC-CARE listed journal).
- Sharma, M. R., Karthikeyan, K., Sorathia, K. D. (2023). Correlation between Physico-chemical attributes of Rhizospheric soils from agricultural fields of semi-arid Kachchh, Gujarat, *World Journal of Advanced Research and Reviews*, 20 (02), 112–120.
- Sharma, M. R., Sorathia, K. D., Jayanthi, G., & Karthikeyan, K. (2024). Study on plant growth promoting traits of PGPR isolates from semi-arid Kachchh, Gujarat under salt stress conditions. *Current Agriculture Research Journal*, 12(1), 400–407. (UGC-CARE listed journal). <https://doi.org/10.12944/carj.12.1.32>
- Sarangthem, T., Prabhadevi, L., & Vijay Kumar, V. (2023). A baseline study on the ecological status of mangrove plantation at Luni, Kachchh District, Gujarat. *International Journal of Scientific Development and Research (IJS DR)*.

### Book Chapters

- Vijaya Chitra, A., Selvaraj, S., Munusamy, A. P., Kuppanan, N., & Karthikeyan, K. (2022). Role of Nanodiagnosics in Health Sciences. In: Kasinathan, K., Elshikh, M.S., Al Farraj, D.AA. (Eds) *Nanomaterials for Energy Conversion, Biomedical and Environmental Applications. Materials Horizons: From Nature to Nanomaterials* (pp. 305–314). Springer, Singapore. [https://doi.org/10.1007/978-981-19-2639-6\\_14](https://doi.org/10.1007/978-981-19-2639-6_14) Online ISBN 978-981-19-2639-6.

### Book

- Suriyanarayanan Sarvajayakesavalu and Karthikeyan Kannan, 2022. Carbon Sequestration. *Intech Open Publishers*. ISBN 978-1-80355-688-8 and Print ISBN 978-1-80355-687

### Newsletter

- Vijay Kumar, V., Kannan, V. and Koladiya, M. (2023). Occurrence of *Duttaphrynus stomatics* in the coastal environment, Mandvi, Kachchh, Gujarat. *Guide.net (E-Newsletter October)* 14(1): 9-10





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4	Dr. Dinesh Misra IFS (Retd.) Former PCCF (HoFF), Govt. of Gujarat	Member
5	The District Development Officer, Kachchh District, Gujarat	Member
6	Dr. R. Parthasarathy, Visiting Professor, LBSNAA, Mussoorie, Uttarakhand	Member
7	The Vice Chancellor, KSKV Kachchh University, Bhuj, Gujarat	Member
8	Prof. Geeta Padate, Former Professor, The M. S. University of Baroda, Vadodara, Gujarat	Member
9	The Member Secretary, Gujarat Pollution Control Board, Gandhinagar, Gujarat	Member
10	Prof. V. C. Soni, Former Professor, Saurashtra University, Rajkot. Gujarat	Member
11	Dr. V. Vijay Kumar, Director, Gujarat Institute of Desert Ecology, Bhuj, Kachchh, Gujarat	Member Secretary



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3	Sh. V.S. Gadhvi, IAS (Retd.), Former CIC of Govt. of Gujarat
4	Dr. Dinesh Misra IFS (Retd) Former PCCF (HoFF), Govt. of Gujarat
5	The Member Secretary, Gujarat Ecology Commission, Gandhinagar. Gujarat, India
6	The District Development Officer, Kachchh District, Gujarat, India.
7	Dr. R. Parthasarathy, Visiting Professor, LBSNAA, Mussoorie, Uttarakhand.
8	Prof. Geeta Padate, Former Professor, The M.S. University of Baroda, Vadodara, Gujarat, India.
9	The Member Secretary, Gujarat Pollution Control Board, Gandhinagar, Gujarat, India
10	The Vice Chancellor, KSKV Kachchh University, Bhuj. Gujarat, India.
11	The Head, Regional Station, Central Arid Zone Research Institute, Kukma, Kachchh. Gujarat, India.
12	The Director, Indian Grassland and Fodder Research Institute, Jhansi, Uttar Pradesh. India
13	The Principal Chief Conservator of Forest (HoFF), Gujarat State Forest Department, Gandhinagar, Gujarat.
14	Prof. V. C. Soni, Former Professor, Saurashtra University, Rajkot. Gujarat, India.
15	Prof. Pragneshkumar. N. Dave, Professor, Dept. of Chemistry, S. P. University, Vallabh Vidyanagar, Gujarat
16	Sh. Dipak Bhimani, Chairman & Managing Director, Navdeep Chemicals Pvt. Ltd, Mumbai, Maharashtra. India
17	Dr. K. T. Ramesh Kumar, Vice President (EHS), Welspun India Ltd, Anjar, Kachchh, Gujarat, India.
18	Sh. Dipesh Kantisen Shroff, Managing Director, Agrocel Industries Ltd., Kachchh.
19	Dr. V. Vijay Kumar, Director, Gujarat Institute of Desert Ecology, Bhuj, Kachchh, Gujarat, India



## HUMAN RESOURCE

S.No.	Name	Designation
<b>SCIENTIFIC STAFF</b>		
1.	Dr. V. Vijay Kumar	Director
2.	Dr. K. Karthikeyan	Assistant Director
3.	Dr. M. Jaikumar	Senior Scientist (till 23rd June 2023)
4.	Dr. B. Balaji Prasath	Senior Scientist
5.	Dr. Nikunj B. Gajera	Scientist
6.	Dr. Jayesh B. Bhatt	Scientist
7.	Dr. G. Jayanthi	Scientist
8.	Dr. Soumya Dasgupta	Scientist (till 31st August 2023)
9.	Dr. V. Kannan	Scientist (till 4th January 2024)
10.	Dr. L. Prabha Devi	Advisor
11.	Dr. Durga Prasad Behera	Scientist
12.	Dr. Sanjay Babu	Project Scientist (till 10th August 2023)
13.	Dr. Dhara Dixit	Project Scientist
14.	Dr. KapilKumar Ingle	Project Scientist
15.	Dr. Krushnakant Baxi	Scientific Officer
<b>PROJECT STAFF</b>		
16.	Mr. Dayesh Parmar	Senior Scientific Officer (GIS & RS)
17.	Mr. Mukesh H. Koladiya	Project Fellow
18.	Mr. Ajay K. Gohel	Project Fellow
19.	Mr. Bhagirath R. Paradva	Project Fellow
20.	Mr. Rakesh A. Poptani	Project Fellow
21.	Mr. Viral Vadodariya	Project Fellow
22.	Ms. Bhagavati Kannad	Project Assistant
23.	Ms. Pallavi Joshi	Junior Research Fellow
24.	Mr. Deep D. Dudiya	Junior Research Fellow
25.	Mr. Pradip B. Baraiya	Project Assistant
26.	Ms. Muskan Karamchandani	Junior Research Fellow
27.	Mr. Ketankumar Yogi	Project Assistant
28.	Mr. Vivek U. Chauhan	Junior Research Fellow
29.	Ms. Kaksha Soni	Junior Research Fellow
30.	Mr. Mosin Khatri	Project Assistant-I

S.No.	Name	Designation
<b>LABORATORY STAFF</b>		
31.	Mr. Ratansi Chaudhary	Senior Scientific Assistant (Chemical Engineer)
32.	Mr. T. Dhananjayan	Senior Scientific Assistant (till 12 <sup>th</sup> October 2023)
33.	Ms. Monika Sharma	Senior Scientific Assistant
34.	Mr. Hirji K. Dangar	Scientific Assistant
35.	Ms. Dipti Parmar	Scientific Assistant
36.	Mr. Nirav Sadhu	Junior Scientific Assistant
37.	Mr. Raturajsinh P. Sarvaiya	Environmental Engineer
38.	Ms. Neetu Mohan	Junior Research Fellow (till 31st January 2024)
39.	Ms. Bulbul S. Kushvah	Jr. Scientific Assistant
40.	Mr. Raj Joshi	Laboratory Cum Field Assistant
41.	Mr. Jayanti Barot	Laboratory Cum Field Assistant
42.	Mr. Arjan Rabari	Laboratory Cum Field Assistant
43.	Mr. Jeet Vaghela	Laboratory Cum Field Assistant
44.	Mr. Bharat Ahir	Laboratory Cum Field Assistant
<b>OFFICE STAFF</b>		
45.	Sh. Nischal Joshi	Senior Manager (Projects & Administration)
46.	Mr. Prakash M. Patel	Executive Engineer
47.	Mr. Manish P. Vyas	Administrative Officer
48.	Ms. Geeta Goswami	Accounts Officer
49.	Mr. Arvind K Lakum	Driver-Cum-Peon
50.	Mr. Altaf A. Maman	Driver-Cum-Peon
51.	Mr. Hameed H. Maniyar	Peon-Cum-Chowkidar
52.	Mr. Dansingh Bist	Cook-Cum-Care Taker
<b>WATERSHED STAFF</b>		
53.	Mr. Amit Ghodasara	Data Entry Operator (WS)
54.	Mr. Gani Node	Peon
<b>SUPPORTIVE STAFF</b>		
55.	Mrs. Ushaben	Sweeper
56.	Mr. Bhura Bhai	Watchman cum Gardner
57.	Mrs. Ramilaben	Assistant Cook

**DOCTORAL STUDENTS**

Name of the Supervisor	Student Details	Title
Dr. K. Karthikeyan (GUIDE)	Mr. Nithul Lal, Ph.D. (Environmental Science), Bharathiar University, Coimbatore, Tamil Nadu	Development of low-cost technology for production of water-soluble pigments from halotolerant microbial strains
Dr. K. Karthikeyan (Co-GUIDE)	Ms. Monika R. Sharma, Ph.D. (Environmental Science), K.S.K.V. Kachchh University, Bhuj, Gujarat	Application of amendments to promote the growth of selected crops in saline soils of Kachchh, Gujarat: An Environment friendly sustainable approach
	Mr. L. Govind Sanjeev Kumar, Ph.D. (Manufacturing Engineering), Annamalai University, Chidambaram, Tamil Nadu	Investigating the corrosion and wear protection and control of degradation rate of magnesium alloys by pulse electro plating process
	Ms. Fakhra Sarwat, (Zoology), Gujarat University, Ahmedabad, Gujarat	Benthic Diversity in the Mangrove Ecosystem of Gulf of Kachchh with special reference to bioaccumulation of selected Organic and Inorganic Constituents
	Ms. Gayatri Thacker, (Microbiology), Saurashtra University, Rajkot, Gujarat	Isolation, Purification, Characterization and multifaceted applications of Bacteriocins
Dr. G. Jayanthi (Co-GUIDE)	Mr. Niravkumar A. Sadhu, Ph.D. (Chemistry), Saurashtra University	Investigation of Phytochemistry, Pharmacognosy and eco-friendly properties of selected plants from Semi-arid region of Western India: Ascertaining their role in medicinal and environmental applications

**POST-GRADUATE STUDENTS**

Student Details	Title of the project
<b>Under the Guidance of Dr. K. Karthikeyan</b>	
Ms. Ishika. M. Pomal, M. Sc (Microbiology), Shri. Maneklal. M. Patel Institute of Science and Research (Affiliated Kadi Sarva Vishwavidhyala), Gandhinagar.	Plant Growth Promoting Characteristics of Selected Bacterial Strains from Hypersaline Soils of Kachchh and its Efficacy on the Growth of Pearl millet under Laboratory conditions.
Harish. A., M. Sc (Life Sciences), Central University of Gujarat, Gandhinagar, Gujarat	Diversity and Distribution of Plankton at Sikka and Kandla, Gulf of Kachchh with reference to select Water quality parameters
Ms. Vaja. M. Prakruti, M. Sc (Chemistry), Dept. of Chemistry, K.S.K.V. Kachchh University, Bhuj.	Evaluation of Phytochemical Constituents and Antioxidant activity of less explored plants of Semi-arid Kachchh, Gujarat, Western India
Ms. Samimbanu. O. Memon, M. Sc (Chemistry), Dept. of Chemistry, K.S.K.V. Kachchh University, Bhuj.	Status of Pollutants (Heavy metals and Hydrocarbons) and Nutrients in the Marine waters of Gulf of Kachchh, Gujarat



<b>Under the Guidance of Dr. G. Jayanthi</b>	
Ms. Priya Vyas, M. Sc (Chemistry), Dept. of Chemistry, K.S.K.V. Kachchh University, Bhuj.	Evaluation of Natural Surfactant Saponin and Green Synthesis of Silver Nanoparticles from the Leaf Extract of <i>Ziziphus mauritiana</i> of Kachchh, Gujarat.
Ms. Rishma, M. Sc (Chemistry), Dept. of Chemistry, K.S.K.V. Kachchh University, Bhuj.	A Study on Adsorption of Alizarin Red S Dye onto Activated Carbon of <i>Ziziphus mauritiana</i> Leaf Powder.
<b>Under the Guidance of Mr. Dayesh Parmar</b>	
Mr. Anupol Bora, Miss Bishakha Chetia, Mr. Roktootpal Saikia, Miss Shalini Gogoi, M. Sc. (Geology), KSKV Kachchh University, Kachchh, Gujarat.	Implications Of Morphometric Analysis on The Occurrence of Landslide in the Silkyara Tunnel Region, Uttarkashi, Uttarakhand, India
Mr. Kaushik Dutta, Miss Bhoomika Mod, M. Sc. (Geology), KSKV Kachchh University, Kachchh, Gujarat.	An Integrated Watershed Development in Western Kachchh

### TRAINING / INTERNSHIP

Name of the Student	Degree	University/College/Institution	Area of Training
<b>Under the Guidance of Dr. K. Karthikeyan</b>			
Ms. Bhumi. N. Chheda	M. Sc Biotechnology	Amity University, Mumbai	Environmental Microbiology
Mr. Dharmrajsinh I. Jadeja	B.Sc., Zoology	St. Xavier's College (Autonomous), Ahmedabad	Phytoplankton and Zooplankton from Marine Water
Mr. R. Manikanda Prabhu	M.Sc Botany	Thiagarajar College, Madurai, Tamilnadu	Laboratory Training on Physio-chemical characteristics of Water and Soil
Mr. Nitheesh Guptha	M.Sc Botany	Thiagarajar College, Madurai, Tamilnadu	Laboratory Training on Physio-chemical characteristics of Water and Soil
<b>Under the Guidance of Dr. G. Jayanthi</b>			
Mr. Meehir Merai	M.Sc. Microbiology	Department of Bio-Sciences, Sardar Patel University	Phytochemical screening of <i>Cordyceps militaris</i> extract
<b>Under the Guidance of Mr. Dayesh Parmar</b>			
Mr. Aikham Buragohain	M. Sc. Geology	KSKV Kachchh University	Remote Sensing and GIS
Miss Ruchi Singh	M. Sc. Geology	Mohanlal Sukhadia University	Remote Sensing and GIS
Mr. Nitish Sonowal	M. Sc. Geology	KSKV Kachchh University	Remote Sensing and GIS
Mr. Albert Hazarika	M. Sc. Geology	KSKV Kachchh University	Remote Sensing and GIS
Ms. Supriya Tamuli	M. Sc. Geology	KSKV Kachchh University	Remote Sensing and GIS



## 29<sup>th</sup> Foundation Day of GUIDE, Date: 1<sup>st</sup> May, 2023





**Beach cleaning on the International coastal cleanup day, Date: 16<sup>th</sup> September, 2023**







## Awareness Programme on Beach cleaning at Mandvi as a part of G20 government event, Date: 21<sup>st</sup> May, 2023





# GUIDE'S Achievements/Works in News Papers

## ખીજડિયા પક્ષી અભ્યારણ્ય જામનગર જિલ્લામાં ટ્રેન ધ ટ્રેઈનર્સ પ્રોગ્રામ યોજાયો

**ખમ્બર-જામનગર**  
જામનગરના ખીજડિયા પક્ષી અભ્યારણ્ય જિલ્લાના માર્ગદર્શકો માટે ટ્રેન ધ ટ્રેઈનર્સ પ્રોગ્રામ ડીએચટી પ્રોજેક્ટના ભાગ રૂપે સંસ્કૃત અને ટેકાઈ આજીવિકા યુ એપ્રોપ્રિયેટ ટેકનોલોજીકલ હસ્તક્ષેપ દ્વારા આરંભવાના ગામોમાં મરીન નેશનલ પાર્ક, ગુજરાત હાથ ધરવામાં આવ્યો છે.



તસવીર : અનિલ ગોહિલ

WWF- બીજ પ્રવૃત્તિના આ ભાગ દરમિયાન મહાનુભાવો દ્વારા દીપ પ્રગટાવી કામગીરી કરવામાં આવી હતી. એટલે કે સમારંભના મુખ્ય અતિથી આર., સંધીલ કુમારન (આઈએફટી) ડીસીએફ-જામનગર, આઈએફટી-ડીસીએફ ખંભાળિયા, દેવભૂમિ દ્રારકા, ગુજરાત, આ કાર્યક્રમમાં ડો. વી. વિજયકુમાર ડાયરેક્ટર, ડો. એમ. જયકુમાર અને ડો. જયેશ ભટ્ટ, ઈકોલોજી, ભુજ અને અનિથી વિશેષ દેશાભેન વધાસિયા, આરએફઓ, ખીજડિયા પક્ષી અભ્યારણ્ય જામનગર દ્વારા આમંત્રિત કરાયા હતાં. આર. સંધિલ કુમારન ખીજડિયા પક્ષીની સ્થિતિ અને મહત્વ વિશે વર્ણન કરે છે. પક્ષી અભ્યારણ્ય અને આ અભ્યારણ્યની વિવિધ સંસ્કૃત્તિ પ્રવૃત્તિ એજન્ટા આર., ધનપાલ, એજન્ટા ડો. વી. વિજયકુમાર, એજન્ટા-જ ડો. એમ. જયકુમાર, એજન્ટા-વ દેશાભેન વધાસિયા કર્યા



સોવેક્રી પક્ષી વિજ્ઞાની અને મુકેશ એચ. ડેકનિકલ સિઝન આપવામાં આવી સોવેક્રી પક્ષીવિદ દ્વારા ગુજરાત હતી. આ ઈવેન્ટ દરમિયાન કુલ ૩૦ ડો. એમ જયકુમારની યાદમાં



માંડવી બીચ પાતે ગુ. ઈન્સ્ટિટ્યૂટ ઓફ ડેકાઈ ઈકોલોજી (ભુજ) દ્વારા જાગૃતિ અને બીચ સફાઈ કાર્યક્રમની તસવીર. (તસવીર : જીવરાજ ગઢવી)

પાકડું કરણનું છાપું

વર્ષ	આજે	સુલભ
7.11 લા.એ	ભુજ	6.55 લા.એ
7.09 લા.એ	ગાંધીધામ	6.51 લા.એ

લાખપત | અબડાસા | નખત્રાણા | ભુજ | માંડવી | મુન્દ્રા | જાંજાર | ગાંધીધામ | ભચાઈ | રાપર

ભુજ, શુક્રવાર, ૩ માર્ચ, ૨૦૨૩

શુક્રવાર સુદ - ૧૧ વિક્રમ સંવત ૨૦૭૫

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## કચ્છ વન્યજીવનના અભ્યાસ માટે ખુલ્લી પ્રયોગશાળા

ભુજ ઈકોલોજી અને જીવવિજ્ઞાની ભુજ એટલે કે કચ્છ ભાગીગણ જીવવિજ્ઞાની કોઈ સીમા નથી એમ કહી શકાય કારણ કે રણ, સેઈવો અને જંગલની સ્થળ વ્યાપકતાના કારણે કચ્છની જીવસંપત્તિ પાકડી છે અને સંવલિત થઈ છે. ૩૦૦ મર્યાદિ વન્ય દિવસ ઉજવાય છે ત્યારે કચ્છની ટ્રાસિએ વાત કરીએ તો બનીના યાસિયા મેટાનો કે રણભૂમિ સહિત ભાવભાગના જંગલોથી માંડીને દરિયાઈ ખાડી સમારે રક્ષણ આપતા ચેરિયાના જંગલો હોય કે પિપ્પોર, કાબોડગરની હરને આવેલા જંગલોમાં કુદરતી આદાર ચક્રના આપકારે સતત સંવલિત થતા, ટકી ગયેલા છતાં જીવતાના અરે આવેલા પ્રાણીઓ અને ૪૦૦થી વધુ જાતિના પક્ષીઓ

પણ કચ્છની અભ્યાસના છે. વિશ વન દિવસે આવા કેટલાક પ્રાણીઓની સુશિતિ અને આ સુભવિય તેના સંકલ્પે નિશ્ચયોગ્ય વેલતા હકારાત્મક માર્ગ સાથે આચર્યા અને ટેકાઈ જિલ્લાની વ્યાપકતા પકકાર સામે વેગવેળા, સાંકે કે દરિયાઈ જીવવિજ્ઞાન જંગલોને ટકાવવાના સંશોધન કચ્છમાં થઈ રહ્યા છે અને તેના તારણના આધારે આવા પ્રાણીઓને સહિત કરવાના ઉપાયો દર્શાવવામાં આવે તેવી બાબત સામે આવી છે. સરવાલે, એક પ્રશ્નપતિ તારણ છે કે, કચ્છ તેની ભૂગોળ અને ઈકોલોજીના કારણે એક અનોખો વિસ્તાર છે. અને વન્યજીવનના અભ્યાસ માટે ખુલ્લી પ્રયોગશાળા તરીકે પ્રખ્યાત છે.

### ગુજરાતમાં માત્ર કચ્છમાં વસતા હેણોતરા માટે વનવિભાગ વિસ્તાર મુજબ સંશોધન હાથ ધરશે

ભુજ ઈકોલોજી અને જીવવિજ્ઞાની ભુજ એટલે કે કચ્છ ભાગીગણ જીવવિજ્ઞાની કોઈ સીમા નથી એમ કહી શકાય કારણ કે રણ, સેઈવો અને જંગલની સ્થળ વ્યાપકતાના કારણે કચ્છની જીવસંપત્તિ પાકડી છે અને સંવલિત થઈ છે. ૩૦૦ મર્યાદિ વન્ય દિવસ ઉજવાય છે ત્યારે કચ્છની ટ્રાસિએ વાત કરીએ તો બનીના યાસિયા મેટાનો કે રણભૂમિ સહિત ભાવભાગના જંગલોથી માંડીને દરિયાઈ ખાડી સમારે રક્ષણ આપતા ચેરિયાના જંગલો હોય કે પિપ્પોર, કાબોડગરની હરને આવેલા જંગલોમાં કુદરતી આદાર ચક્રના આપકારે સતત સંવલિત થતા, ટકી ગયેલા છતાં જીવતાના અરે આવેલા પ્રાણીઓ અને ૪૦૦થી વધુ જાતિના પક્ષીઓ



વન્ય વન્ય જીવન દિવસ  
ભુજ ઈકોલોજી અને જીવવિજ્ઞાની ભુજ એટલે કે કચ્છ ભાગીગણ જીવવિજ્ઞાની કોઈ સીમા નથી એમ કહી શકાય કારણ કે રણ, સેઈવો અને જંગલની સ્થળ વ્યાપકતાના કારણે કચ્છની જીવસંપત્તિ પાકડી છે અને સંવલિત થઈ છે. ૩૦૦ મર્યાદિ વન્ય દિવસ ઉજવાય છે ત્યારે કચ્છની ટ્રાસિએ વાત કરીએ તો બનીના યાસિયા મેટાનો કે રણભૂમિ સહિત ભાવભાગના જંગલોથી માંડીને દરિયાઈ ખાડી સમારે રક્ષણ આપતા ચેરિયાના જંગલો હોય કે પિપ્પોર, કાબોડગરની હરને આવેલા જંગલોમાં કુદરતી આદાર ચક્રના આપકારે સતત સંવલિત થતા, ટકી ગયેલા છતાં જીવતાના અરે આવેલા પ્રાણીઓ અને ૪૦૦થી વધુ જાતિના પક્ષીઓ

### કચ્છના દરિયાની વિવિધ 150 પ્રજાતિ ઉપર કરે છે ભુજની લાલન કોલેજના વિદ્યાર્થીઓ અભ્યાસ

ભુજ ઈકોલોજી અને જીવવિજ્ઞાની ભુજ એટલે કે કચ્છ ભાગીગણ જીવવિજ્ઞાની કોઈ સીમા નથી એમ કહી શકાય કારણ કે રણ, સેઈવો અને જંગલની સ્થળ વ્યાપકતાના કારણે કચ્છની જીવસંપત્તિ પાકડી છે અને સંવલિત થઈ છે. ૩૦૦ મર્યાદિ વન્ય દિવસ ઉજવાય છે ત્યારે કચ્છની ટ્રાસિએ વાત કરીએ તો બનીના યાસિયા મેટાનો કે રણભૂમિ સહિત ભાવભાગના જંગલોથી માંડીને દરિયાઈ ખાડી સમારે રક્ષણ આપતા ચેરિયાના જંગલો હોય કે પિપ્પોર, કાબોડગરની હરને આવેલા જંગલોમાં કુદરતી આદાર ચક્રના આપકારે સતત સંવલિત થતા, ટકી ગયેલા છતાં જીવતાના અરે આવેલા પ્રાણીઓ અને ૪૦૦થી વધુ જાતિના પક્ષીઓ

**સોંઠા (Spiny tailed lizard) ની વસતિ વધુ પાલ ઠિકાઈની સમસ્યા**  
જમીન ખોદીને સોના સંક્રાંતી વસતિ સારી છે. ગરબી કુનું આ પ્રાણી સંવલિત થઈ રહ્યું છે પણ તેના તેલના ઉપયોગ માટે ઠિકાઈની પ્રવૃત્તિ પણ વધતી રહી છે. સાંકે અગાઉ માત્ર ખની અને અભ્યાસના જમીની વિસ્તારમાં જોવા મળતો હતો પણ સંશોધનના અરે તેનો વસવાટ લગભગ ૬૦૦૦ ચોરસ ફીટના વિસ્તારમાં જોવા મળી રહ્યો છે. Spiny tailed lizard તરીકે ઓળખાતું આ પ્રાણી ગુજરાતમાં માત્ર કચ્છમાં અને ભારતમાં અરબાદા, રાજસ્થાન, મહારાષ્ટ્રમાં જોવા મળે છે. ઈકોલોજી અભ્યાસ કરી શકાય છે.



## માંડવી કાંઠે જાગૃતિ-સફાઈ અભિયાન યોજાયું

કોચ (તા. માંડવી) તા. ૩૦ : ભારત જી-૨૦ પ્રેસિડેન્સી હેઠળ બીચ કલીન અપ પ્રોગ્રામ એક પૃથ્વી એક પરિવાર એક ભવિષ્ય અંતર્ગત ગુજરાત ઈન્સ્ટિટ્યૂટ ઓફ ડેકાઈ ઈકોલોજી દ્વારા માંડવી બીચ પાતે જાગૃતિ અને બીચ સફાઈ અભિયાન યોજાયું હતું. દરિયાઈ ગંદકીની સમસ્યા અને મહાસાગરોના ટ્રાઈ વિકાસ તરફ સાથે મળીને કામ કરવાની જરૂરિયાત પર ધ્યાન દોરવા માટે જાગૃતિ અભિયાનના ભાગરૂપે વિદ્યાર્થીઓ સાથે કાર્યક્રમ યોજાયો હતો. ડો. દુર્ગાપ્રસાદ અને ચાર વર્ષથી નેચર અને બીચ અભિયાનનો કાર્યક્રમ સંસ્થા દ્વારા કરવામાં આવે છે, કુદરત અને તેની સંપાદનું ધ્યાન જાગૃત થઈ સોને રાખવું પડ્યું અને આ અભિયાનમાં સૌ સહભાગી બને તેવી અપીલ તેમણે કરી હતી.

માંડવી બીચ પાતે ગુ. ઈન્સ્ટિટ્યૂટ ઓફ ડેકાઈ ઈકોલોજી દ્વારા જાગૃતિ અને બીચ સફાઈ કાર્યક્રમની તસવીર. (તસવીર : જીવરાજ ગઢવી)

માંડવી બીચ પાતે જાગૃતિ અને બીચ સફાઈ અભિયાન યોજાયું હતું. દરિયાઈ ગંદકીની સમસ્યા અને મહાસાગરોના ટ્રાઈ વિકાસ તરફ સાથે મળીને કામ કરવાની જરૂરિયાત પર ધ્યાન દોરવા માટે જાગૃતિ અભિયાનના ભાગરૂપે વિદ્યાર્થીઓ સાથે કાર્યક્રમ યોજાયો હતો. ડો. દુર્ગાપ્રસાદ અને ચાર વર્ષથી નેચર અને બીચ અભિયાનનો કાર્યક્રમ સંસ્થા દ્વારા કરવામાં આવે છે, કુદરત અને તેની સંપાદનું ધ્યાન જાગૃત થઈ સોને રાખવું પડ્યું અને આ અભિયાનમાં સૌ સહભાગી બને તેવી અપીલ તેમણે કરી હતી.

સંસ્થાના ડાયરેક્ટર ડો. આર. વિજયકુમારે ગુજરાત ઈન્સ્ટિટ્યૂટ ઓફ ડેકાઈ ઈકોલોજી દ્વારા કુદરતની જાળવણી માટેના આ કાર્યક્રમો યોજાતા રહેશે. ડો. પ્રભાદેવીએ સંસ્થા દ્વારા કરાતી વિવિધ પ્રવૃત્તિઓ અંગે સોને વાકેફ કર્યા હતા. સિક્કોર નેચર સંસ્થાના ધાર્મિકભાઈ, મિલનભાઈ, હિરેનભાઈ, પણ ભાગીદારીમાં ઉલ્લેખપર્સની કંપની બનાવી જમીન ખરીદીને હપ્તાથી

## Environmental Day Celebration at GUIDE Campus, Date: 5th June 2023



## Workshop on “United Nations Global Ocean Decade Programme for Blue Carbon (GO-BC)” and Visit of participants at GUIDE on 25<sup>th</sup> & 26<sup>th</sup> January, 2024



# NOTES

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