



Registered With Ministry of
corporate affairs

CSR00013950

ANNUAL REPORT

2023 – 2024



 **Gujarat Ecology Society**
Synergy House, Subhanpura, Vadodara 390 023, Gujarat, India
Phone: (0265) 228 3329, 228 3341, e-mail: info@gesindia.org
website: www.gesindia.org

THE ORGANISATION

Gujarat Ecology Society (GES) is a non-profit organization registered in January 1995 under the Bombay Public Trust Act and the Societies Registration Act. GES is being managed by prominent individuals from diverse disciplines with a proven commitment to environmental conservation and ecological restoration. GES derives its strength from networking and integrating the inputs from associates and eminent visiting scientists and specialists in distinct disciplines from various agencies in the country in general and Gujarat in particular.

Mission: “To pursue, promote and disseminate knowledge, information, and processes that enable conservation, restoration, and development of natural resources concerning their ecological sustainability”.

- Notified Under Section 35(1)(ii) of the Income-tax Act, 1961.
- Recognized as a Scientific and Industrial Research Organization by the Ministry of Science and Technology, the Government of India
- Registered under The Foreign Contribution (Regulation) Act, 1976
- Member of the International Union for Conservation of Nature

BOARD MEMBERS

SHRI SAMIR PARIKH, CHAIRMAN

DR. VIREN J PATEL, VICE CHAIRMAN

SHRI PRADEEP KHANNA, BOG MEMBER

Dr. DATTA MADAMWAR, BOG MEMBER

PROF. ANJANA DESAI, BOG MEMBER

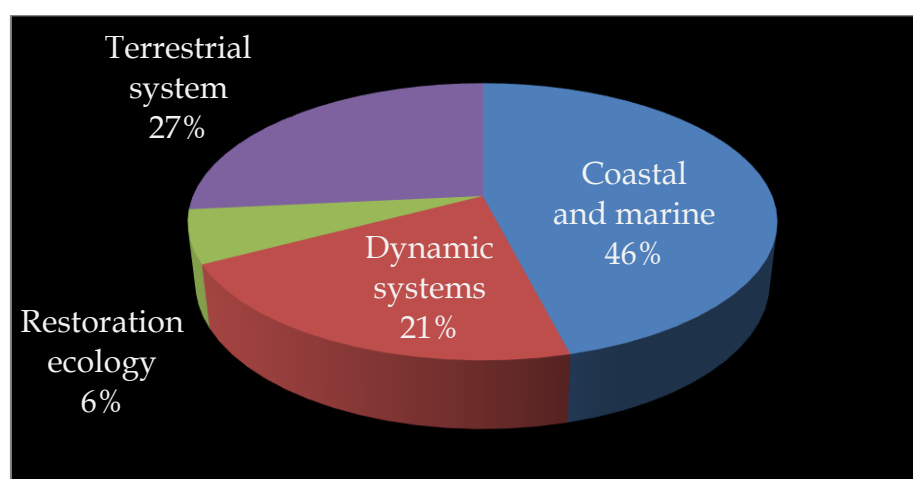
DR. DEEPA J GAVALI, SECRETARY

THRUST AREAS

- Biodiversity Conservation
- Coastal and Marine Ecology
- Dynamic Ecology
- Restoration Ecology



Since its inception, GES has completed 113 projects addressing



Objectives of the Society

- Undertake ecological and environmental research, education, training, and extension activities
- Promote ecological and environmental awareness among the various stakeholders
- Undertake and implement programmes for ecological restoration projects
- Collaborate with local/state/National Institutions to fulfill the objectives of the Society

STRENGTH

Creating a multidisciplinary ecological database is considered one of the main components of all programs of GES. The Society has, on its rolls, a team of highly qualified and experienced professionals/scientists, on subjects like

- Environmental Sciences
- Marine Sciences
- Wildlife science
- Biostatistics
- Botany
- Zoology
- Geology
- Hydrogeology
- Aquatic sciences



CURRENT YEAR PROGRAMMES

The brief description of the Society's activity for the year 2023-24 under the various programmes is described briefly below.

BIODIVERSITY CONSERVATION

LIVELIHOOD ENHANCEMENT OF SELECTED RURAL WOMEN THROUGH VALUE ADDITION OF MEDICINAL PLANTS ALONG GUJARAT

(Duration: August 2021-July 2023, 2 years)

This project has been sponsored by the Science for Equity Empowerment and Development (SEED) Division of the Department of Science and Technology, Ministry of Science and Technology, New Delhi for 2 years.



- The project aimed at conserving biodiversity, and indigenous technical knowledge in 5 villages of the Vadodara district through the self-help groups of the respective villages.
- The broad objectives of the project are (1) Enhancing the livelihood capacities of women through processing and value chain addition of products from indigenous medicinal plants and (2) Preserving ethnobotany and traditional knowledge of the studied region.
- Under the project, training was imparted to around 350 women from 5 SHG in 5 villages of Padra taluka, Vadodara district with respect to solar dryer uses, maintenance, and marketing linkages.
- Project highlights: Solar dryer installed at 5 villages and the SHG benefited by value addition of important plants and products. The marketing strategy enabled an addition in the income of the SHG through the sale of the products and more women joined in the activity intensively.

The fruit of moringa, which was generally not consumed when they matured up, was dried up and used in soup preparation by the SHG women.

- With the training in nursery, the women raised the medicinal plants (*dodi* and *varsha dodhi*) which had become locally extinct in their farm edges, thus ensuring supply.

DYNAMIC ECOLOGY

SOURCE-TO-SINK SPATIO-TEMPORAL VARIABILITY IN SEDIMENT FLUXES AND THEIR CONTROL ON COASTAL SEDIMENT DISPERSAL SYSTEMS IN GUJARAT (Duration: August 2019-July 2022, ext. to 2023, 4 years)

This project is sponsored by MoES, New Delhi for a period of 3 years (August 2019-July 2022, extended to November 2023). There are five institutions involved in the project viz., M S University of Baroda (lead institution); Indian Institute of Seismological Research, Gandhinagar; M G Science Institute, Ahmedabad; Gujarat Institute of Desert Ecology, Bhuj and Gujarat Ecology Society. The broad objectives of the project include,

1. To understand Source-to-Sink sediment transport in the two river systems of different climatic regimes.
2. To carry out validation of conventional palaeo-environmental proxies in known climate regimes.

3. To understand ecological linkages with sedimentation patterns.



Eichhornia infestation in Dhadhar river

- Gujarat Ecology Society's role included compilation of all the sectoral components and presenting the final report.
- Ecological study of the Dhadhar river basin indicated pollution in downstream of the river channel after Por.
- There are multiple check dams present on the upper stretches of the river, which has influenced the vegetation distribution pattern. Floral species distribution has a relation with the geological strata of the region.
- There is a need to check the pollution of the river and maintain ecological health. The

PREPARATION OF ECOLOGICAL PROFILES FOR TEN TALUKAS OF THE SABARKANTHA AND BANASKANTHA DISTRICTS FOR THE YEAR 2022-23

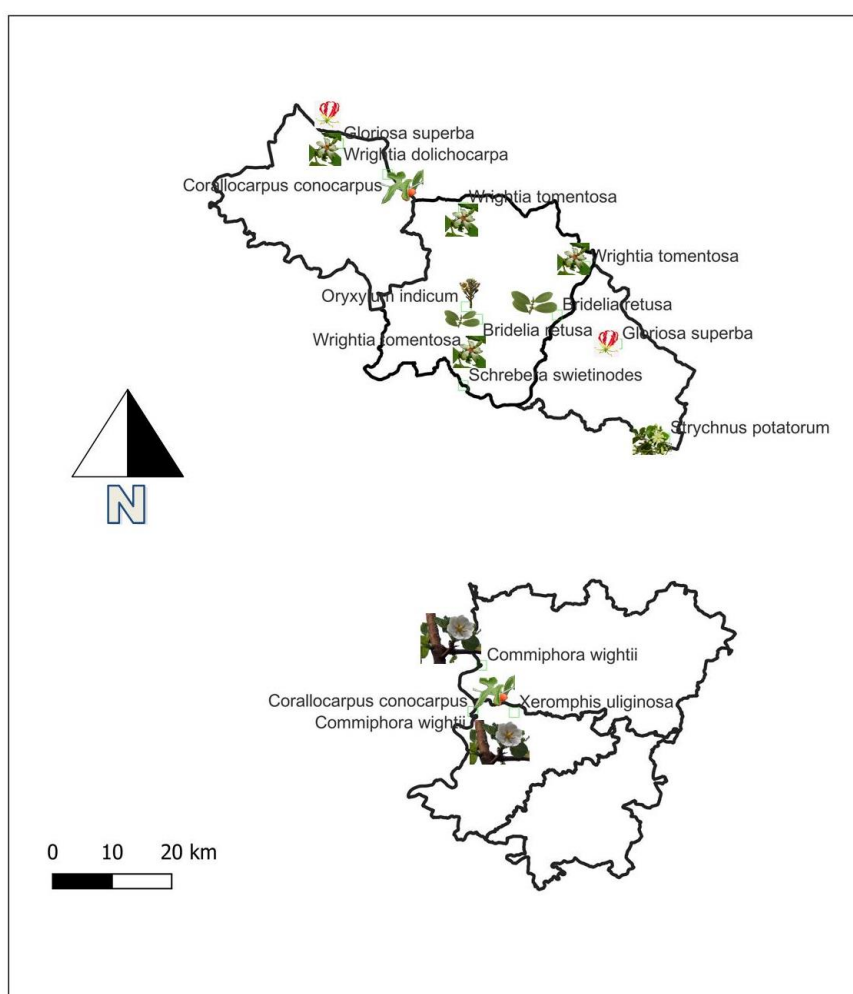
(Duration: Sept 2022 to May 2023, 9 months)

This project is sponsored by the Gujarat Ecology Commission, Gandhinagar with the following objectives:

1. To prepare management decision support documents that will help to plan for the development activities in the particular block with an overall overview of the ecological conditions of the area.
2. To create one of the largest ecological and environmental data banks at the block level as well as at the village level to utilize it in the management support system.

3. To create additional data sources to prepare an Integrated Sustainable Development plan.
4. To identify the environmental/ecological issues of talukas, this will help for the restoration of the ecology of a particular taluka.

The study area included six talukas in the Banaskantha district and 4 talukas of the Sabarkantha district. The study comprised a compilation of the secondary data and a collection of primary ecological data as per the grid quadrature system. The trends were analyzed post-compilation of the primary and secondary data and laid on GIS. Important highlights included reporting of rare and threatened species from the primary survey and its conservation measures suggested accordingly.



Short-term, midterm and long-term implementable management strategies were suggested for the 10 talukas. Some of the strategies suggested include:

- ❖ There is a need to develop an integrated Basin development plan not only from the perspective of the Irrigation department but the ecological revival of the rivers for long-term sustainability and water availability. Vav and Tharad taluka have dried river basins and plantations of native species along the river channel will ensure green belt shelter and natural habitats for wildlife.
- ❖ A list of plant species for plantation in the denuded forest hill areas of Amirgadh, Khedbrahma, Danta, and Dantiwada was suggested
- ❖ The urban development plan should integrate the green and blue zones into the plan.
- ❖ There is a need to promote dryland crops like millets where the water demand is low and thereby reduce the dependency on water for irrigation.

RESTORATION ECOLOGY

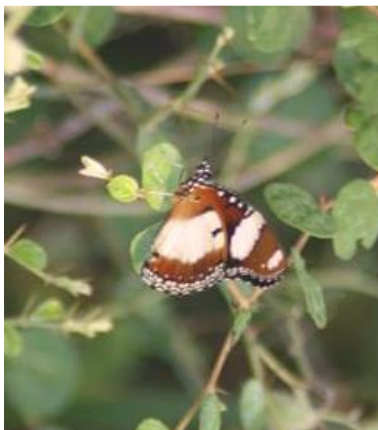
RESTORATION OF NATURAL GRASSLAND HABITAT AT LAKHPAT REGION, GUJARAT (Duration: June 2021- May 2025, 4 years)

This project is sponsored by ADANI Ports and Economical Zones for a period of 4 years. The projects aim to build sustainable growth in the Lakhpat region by taking the initiative of restoring the natural habitats along the Guneri village.

The objective of the project includes (1) Restoring the grasslands in the *gauchar* lands. (2) Documentation of ecological process and the success of grassland development and (3) Capacity building of the locals in the ecological monitoring process and process of documentation and observation of changes. The project achievements in the third year are highlighted in the following section:

- ❖ The restoration process was initiated at three sites with an area of 40 Ha.
- ❖ The soil amelioration undertaken resulted in improvement in soil fertility and reduction in soil salinity at all the treated sites.
- ❖ The biodiversity of the restored sites improved, and migratory birds were reported from the sites. Apart from this threatened plant species *Limonium stocksii* was found growing in one of the restored plots.
- ❖ The local community was trained in the grass seeds collection in the first year and they continued the process every year, thereby contributing towards the sustainability of the project.
- ❖ Awareness sessions among the local community and students on biodiversity were conducted.

- ❖ The present project focused on three SDG goals viz., (i) SDG 13 Focuses to combat climate change and its impacts. (ii) SDG 14 States conserve and sustainably use the oceans, seas, and marine resources for sustainable development. (iii) SDG 15 Focuses to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combating desertification, and halt and reverse degradation and halt biodiversity loss.



Sustainable Development Goals (SDGs) sufficed through various projects implemented.



Achieve gender equality and empower all women and girls



Take urgent action to combat climate change and its impact



Conserve and sustainably use the oceans, seas, and marine resources for sustainable development



Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation, and halt biodiversity loss.

HASMUKH SHAH MEMORIAL LECTURE -2023

The Hasmukh Shah Memorial Award for Ecological Studies is initiated by the Gujarat Ecology Society (GES) to honor the legacy of our Founder Chairman, Shri Hasmukh Shah. He had an abiding commitment to ecology and conservation. The Second Hasmukh Shah Memorial Lecture was organized on 5th January 2024, at FGI, Vadodara.

Lord Meghnadh Desai delivered the Second Hasmukh Shah Memorial Lecture on the global issue of climate change and whether humankind will ever be able to tackle it. He remembered Shri Hasmukh Shah as an immensely impressive person and an amazingly bright man, absolutely versatile, and very good at academic life, he advised three prime ministers, running a petrochemical industry successfully. He has that kind of informal links cultural and Social Links which got him up to the top that's the most remarkable.

In his discussion on climate change, he started with a mention of a book called The Silent Spring, 1961 describing the impact of insecticides-DDT extensively on worms and little creatures that were eating that and they were poisoning themselves. At that time DDT was a great danger in the whole climate change movement around about 1960s.

In 1960 as with the first space exploration the world saw a picture of Earth from space and we realized that the Earth is not a vast thing it's just a little thing. Suddenly people started talking in terms of climate and the earth as a family.

Today the world has the experience of climate change and knows about all sorts of ecological disasters and people migrating from one country to another and all that so there is no doubt that something is happening and that ideally, we ought to do something about that.

But when it comes to nations, they have the priority of protecting the economy and ultimately very little action has been taken on climate change. Just as we have learned to live ignoring nuclear threats as so many countries have nuclear capabilities and ongoing war nuclear weapons.

It is an interesting psychological problem that people know climate change is a problem, but we are not taking it seriously.

The 1972 United Nations Conference on the Human Environment in Stockholm was the first world conference to make the environment a major issue. The participants adopted a series of principles for sound management of the environment including the Stockholm Declaration and Action Plan for the Human Environment and several resolutions.

Today climate change is a major challenge however, there is no actual change in the behavior in the world. The question is that we do not believe this is a threat.

The rich commute by flights, oil producers and polluters are very rich and they don't really feel any pressure to do anything other than go on producing what they do and they always find one or another reason to postpone the Bad Day. It is very difficult for governments to make unpopular decisions, though they may adversely to the coming generations.

Geographical location is also important since Island countries will have the problem of submergence compared to inland countries passively suffering from climate change. However, migration will be a major issue for example in the UK what they call illegal migration has become a big political issue.

Rich countries are not interested in tackling climate change now the poorer countries who would like to tackle it do not have any weapons.

Though idealistically we believe that mankind is a single place and we all love each other and therefore we ought to sort of behave in a Cooperative but everybody look after own interest first. What has the future generation done for me that I should do anything for the future generation that sort of attitude, is observed.

Poor people get more out of an extra dollar than rich person idea was suppose you suppose you transfer \$1 of income from a rich person to a poor person the overall benefit of society will increase because the rich person doesn't lose that much utility and the poor person gains a lot of utility so isn't it a good idea that we ought to have governments which look at the social welfare of the whole society and try and maximize that, of course, was a very popular idea in the 1930s and so on.

One limitation of implementing a climate change action plan is that ultimately each country is Sovereign we have constructed an International System we talk about cooperation and the United Nations and so on United Nations is based on Sovereign countries and Sovereign countries mean that you cannot make them do anything they don't want to do.

People hope that shortly, a new fuel will be available to reduce carbon emissions. There is always hope for that because we have had lots and lots of Inventions going on or that micro action micro individual actions may add up just if you are lucky so that they will make a difference to the world.

It is the case that finding alternative sources of energy creation and we know that a lot of people are doing things on wind power and a lot of things being done on solar power and India for example is very good on solar power it may be that there is just enough scope to be able again to escape or postpone by using alternative resources again it has been mentioned.

If we change the pricing of things if you price the carbon properly if we price the use of fossil fuel properly or if we try and get renewable resources you things done from water or solar power or something like that we may just be able to postpone the climate change.

As an individual, we cannot bring change at a global level but at least in my behavior, I ought to do whatever little I can do for example not to waste water and call it a Gandhian idea.

Climate change sort of field we have not found a magic antidote that will get it out of the climate change Dilma but it will not be prohibitively expensive or it will not be destructive to other people now having your nuclear weapon does not cause anybody any problems probably does not use it but having it as a threat to the other people

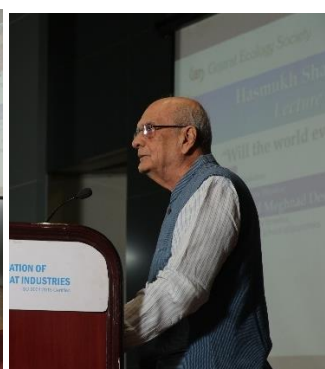
We cannot have a guarantee or any certainty but we hope that we may have an invention that will simultaneously save us from using fossil fuel and not cause any other problems and that we will be able to tackle climate change and life is going to be all right.



*Welcome address by Samir Parikh,
Chairman, GES*



*Lord Meghnadh Desai
Guest Speaker*



*Dr. Munibhai Desai,
Session Chair*

THE HASMUKH SHAH MEMORIAL AWARD

The event of the first Hasmukh Shah Memorial Awards for ecological studies instituted in 2022 was organized on 5 January 2024. The Award embodies a profound commitment to preserving and perpetuating the Visionary Legacy of Sri Shah was the founder and Chairman of many organizations like Gujarat Ecology Society GES Gujarat Ecology Commission (GEC), Gujarat Institute of Desert Ecology (Guide), Gujarat Nature Conservation (GNCS) etc. Kachnar Trust, managed by Shah Sir's family, instituted the Hasmukh Shah Memorial Awards with GES to recognize and reward individuals whose work has made a significant impact in the field of environment conservation or development demonstrating a proven track record of research & development or implemented Innovative environmental technical or social solutions.

The awards are given in two categories first, the researchers and second, the practitioners. Each category carries a prestigious cash price of 2 lakh rupees each this is the main award and jury recognition award of 25,000 rupees each to four individuals two in each category with promising research potential.

Outreach efforts included disseminating information through the GES website, LinkedIn, major national research groups, and various social media platforms.

This year an overwhelming response with 24 applications reflects Nationwide's interest in this commendable initiative. All applications were analyzed against eligibility criteria each application was meticulously assessed and Ranked based on criteria such as impact Innovation, sustainability, and scalability for evolution and shortlisting of the 10 top applicants. A distinguished three-member jury panel comprising Dr. Anjana Desai, Dr. Shailesh Nayak, and Shri Girish Shani was to evaluate the shortlisted final awardees. The candidates presented their work through 20 minutes online presentation on 20th October 2023. Based on the final assessment final candidates were awarded.

The first practitioner award was given to Arpit Deomurari for his exemplary work on technology for conservation. He has over 18 years of professional experience in private, public, and corporate environments in various areas ranging from IT, and GIS to conservation. He used multiple research and technology tools to bring improvements in the natural and resource management and sustainable development domain.

In the research category, the main award was shared by two young ecologists Ms Amrita Chorasiya and Mr Alvin Anto. Ms Amrita Chorasiya is acknowledged for her research on Tree species diversity estimates of selected Forest covers of India, which was very well correlated with conventional field diversity data so this correlation was with a high degree of precision.

Mr. Alvin Anto shared this award for his work on understanding the primary drivers of coral resilience. He developed a technique which is a resilience-based management technique that was compared to the conventional method this is used for the studies by identifying the primary drivers that are based on symbiotic algae associated with the coral reefs.

Dr Amil Khan was awarded with jury recognition for his work on mapping and quantitative assessment of plant resources and distribution in Madhya Pradesh Central India.

Mr. Murlidhar Adhikari worked on scaling up a system of pro-intensification for food security and income enhancement of small marginal power under the practitioner category. Mr Adhikari worked on different techniques that led to the increase in farming income, and soil and water conservation. He also adopted various methods of extension work to the farming community.

Ms Shisha Pathan received the jury recognition award for her outstanding work on how to study the unseen. She worked on various methods to investigate the ecology and population of sea cows through their dynamic underwater seagrass ecosystems. She used the method to understand the remnant population of dugongs that is sea cows using the seagrass pasture and this was used as a tool to locate the habitat of sea cows.

The second recipient of the jury selection award is Miss Atira Faruk for her impactful work on iron supplementation's effect on the growth of polyps and spinea in aquaponic. Her work has the potential to impact replacing conventional nutrients with fish effluent from the primary aquaculture system the primary aquaculture

system supplies 10 of the micronutrients required for plant growth and C 1q2 to optimize the iron concentration for the supplement so thank you all and

INVOLVEMENT AS AN EXPERT

1. Dr. Jayendra Lakhmapurkar gave a lecture at GSFC, Vadodara on the Wetland Day Celebration “Plastic Pollution and Wetland Restoration” on 8th June 2023.
2. Dr. Jayendra Lakhmapurkar was invited as a judge for the selection of a project at the District Level for the National Children's Science Congress Regional Community Science Centre
3. Dr. Deepa Gavali was invited to deliver a talk on “*Understanding Coastal Resilience and Coastal Vulnerability and Risks*” by Gujarat Institute of Disaster Management, Gandhinagar, held via online mode of Virtual Training Programme on Building Resilience in Coastal Areas of Gujarat on 19th July 2023.
4. Dr. Deepa Gavali was invited to deliver a talk on “*Mangrove Ecosystem for Cyclone Protection*” by Gujarat Institute of Disaster Management, Gandhinagar, held via online mode of Virtual Training Programme on Nature-based Solutions for Cyclones in Gujarat on 30th October 2023.
5. Dr. Deepa Gavali presented paper on “*Importance and role of Gujarat mangroves in climate change and livelihood*” at the Blue Carbon Workshop, held at Ahmedabad University on 24th and 25th January 2024.

TRAINING ORGANIZED

- The seed ball preparation camp was organized for the school children at Guneri village using local grass and compost. The seeds balls were then broadcast in the restoration sites.

DISSERTATION AND INTERNSHIP PROGRAMMES

DISSERTATION

1. Ms. Pranali Vilas Pandav, MURP, MS University of Baroda, completed her dissertation on “Urban Wetland (Lake) Finance Management: Case Study of Vadodara”. Guided by Khyati G Tewari (M S University) and Deepa Gavali
2. Reshma Tadv, MSc, Zoology Department, M S University of Baroda, completed a dissertation on “Inventory of Adaptive Avian Species in Inland Wetlands of Vadodara”. Guided by Dr. Deepa Gavali and Prof. Devkar Ranjit (M U University)
3. Manipal Singh Chauhan, MSc, Zoology Department, M S University of Baroda, completed a dissertation on “Spatial distribution of wetlands in Vadodara City and their status”. Guided by Dr. Deepa Gavali and Prof. Devkar Ranjit (M U University)

INTERNSHIP

Gujarat Ecology Society encourages summer internship programmes as part of the extension activity and five students have gained from such programmes.

1. Naina Kapadiya and Shriya Panchal from MURP, I year, M S University of Barods
2. Renuka Kshirsagar and Naushad Ali from Development (MA), I year, Aziz Premji University, Bangalore
3. Mr. Krishnanshu Panda, Symbiosis Centre for Media and Communication, Pune, 1st year graduation.

NEXT YEAR PLAN

RESEARCH PROGRAMMES

- Plantation programme to enhance the green cover of Nandida village, Vagra Taluka.
- Installation of Sewage Treatment Plant demonstration project on reuse of water at two villages.
- Restoration of abandoned mining sites

THE STAFF

Name	Designation
Dr. Jayendra J Lakhmapurkar	Acting Director
Dr. Deepa J Gavali	Deputy Director
Dr. Sonia Thadani	Assistant Director
Shri Bipin Gala	Accountant
Shri Bhupindra Patel	Field associate
Shro Mansingh	Field Assistant

ACKNOWLEDGEMENTS

We are thankful to the Ministry of Earth Sciences (MoES), Adani Ports and SEZ, Birla Copper for funding research studies carried out during the year.

