



NATURE ON CAMPUS

AN ATTEMPT TOWARDS
GREEN AUDIT



**SAMANTA CHANDRA SEKHAR
(AUTONOMOUS) COLLEGE,
PURI, ODISHA**

**Accredited with 'A' by NAAC and declared as college
with potential for Excellence by UGC
(Affiliated to Utkal University, Bhubaneswar, Odisha)**

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PRINCIPAL

2019-2021

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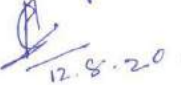
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S.C. S. (AUTONOMOUS) COLLEGE, PURI, ODISHA

2019-2021

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I, on behalf of all the members of 'Green Audit Team', owe my profound gratitude towards our revered Principal Madam, Dr. Sujata Mishra for giving us the opportunity to take up this emboldening task of Green Auditing of the college. I express my special thanks to her for her boisterous inspiration and suggestions.

I would not forget to remember students of Department of Botany and Zoology for their unlisted contributions and more over their timely support till the completion of this project.

I thank all those, involved directly and indirectly in contributing our efforts. I personally owe the responsibility in case of any lapses and lacunae. I extend my extreme thankfulness to my team members for their supports.

I hope, the result presented in this report would be extremely useful to establish a baseline data to assess future sustainability by avoiding the interruptions in college environment that are more difficult to handle and their corrections requiring high cost in future.

Omission if any, in this brief acknowledgement, is inadvertent and does not imply ingrate

(Dr. Harihar Prasad Dash)

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S C S (Autonomous) College,
Puri, Odisha

17.07.2020

DECLARATION

This is to certify that, the 'Green Audit Report' prepared by the college and the database used in this report is true to the best of our knowledge. We sincerely hope that, it will be validated by Internal Quality Assessment Cell (IQAC) and the National Assessment Accreditation Council (NAAC) during their visit to this Establishment.

Dr. Harihar Prasad Dash

Coordinator

ASSOC PROF. & H.O.D
DEPARTMENT OF BOTANY
S.C.S. (A) COLLEGE, PURI

Dr. Sujata Mishra

PRINCIPAL
S.C.S. (A) COLLEGE, PURI



FROM THE DESK OF THE PRINCIPAL



The rapid urbanization and development at local, regional and global level has led to several environmental and ecological crises. On this background, it becomes essential to adopt the system of the Green Campus for the institute which will lead to sustainable development.

S C S (Autonomous) College, Puri, is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends. The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The methodology included, physical inspection of the campus, observation and review of the documentation, and data analysis. It works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, alternative energy and mapping of biodiversity. With this in mind, the specific objectives of the audit was to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on student health and learning environment.


Dr. Sujata Mishra
Principal
S.C.S. (A) COLLEGE, PURI



PREFACE



Colleges and Universities have broad impacts on the world around them, both negative and positive. The activities pursued by colleges can create a variety of adverse environmental impacts. But colleges are also in a unique position as educational institutions to be leaders in pursuing environmentally sustainable solutions. Green Audit is linked to Sustainable development process. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the progress of Green Audit process. The green audit practically involves energy conservation, use of renewable sources, rain water harvesting, and efforts of carbon neutrality, planting of trees, hazardous waste management and E-waste management. Finally, Green audit is a requirement of NACC assessment of the Colleges and Universities.

It is necessary to conduct green audit in college campus because students have to be aware of the significance of a sustainable green environment, its advantages to save the planet and thereby get motivated to become good citizens of the country. Green audit and sustainable development process help to reduce wastage and associated cost as well as increase the product quality. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more relevant.

Green audit can be a useful tool for a college to determine how and where they are using most of energy, water or other resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. Green auditing can also create

health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of the impact of green methods on campus. It gives an opportunity for the development of ownership, personal and social responsibility for the students and teachers.

All over the world, colleges and universities are looking to a sustainable future by working to become carbon neutral. Universities are taking responsibility for their environmental impact and are working to neutralize those effects. To become carbon neutral, universities are working to reduce their emissions of greenhouse gases, reduce their use of energy, use more renewable energy, and emphasize the importance of sustainable energy sources.

S C S (Auto) College, Puri, conducting the green auditing during the period of 2020-2021 for a sustainable future of the campus.

The findings of this report show that the college performs fairly well on sustainability issues. The college does consider the environmental impacts of most of its actions and makes a concerted effort to act in an environmentally responsible manner. Even though the college does perform fairly well, the recommendations in this report highlight many ways in which the college can work to improve its actions and become a more sustainable institution.

Dr. Harihar Prasad Dash

Coordinator Green Audit Team &

H O D Dept. Of Botany

**ASSOC PROF. & H.O.D
DEPARTMENT OF BOTANY
S.C.S. (A) COLLEGE, PURI**

CONTENTS

| Sl. No | Chapter | Page |
|--------|------------------------------|------|
| 1. | Introduction | 01 |
| 2. | Objectives | 01 |
| 3. | Methodology | 02 |
| 4. | About the college | 02 |
| 5. | Vision and Mission Statement | 03 |
| 6. | Green Auditing | 04 |
| 7. | Land use Analysis | 04 |
| 8. | Geographical Location | 05 |
| 9. | Land Use Data | 07 |
| 10. | Floral Diversity | 08 |
| 11. | Faunal Diversity | 21 |
| 12. | Weather Data Analysis | 23 |
| 13. | Air Quality Analysis | 24 |
| 14. | Water Quality Analysis | 25 |
| 15. | Noise Level Analysis | 28 |
| 16. | Waste Disposal | 29 |
| 17. | Vehicle Free Campus | 30 |
| 18. | Electric Power Consumption | 30 |
| 19. | Efforts and Initiatives | 30 |
| 20. | References | 31 |

INTRODUCTION:

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyse environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO₂ from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

OBJECTIVES:

In recent time, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

- To map the Geographical Location of the college
- To document the floral and faunal diversity of the college
- To record the meteorological parameter of Puri where college is situated
- To document the ambient environmental condition of weather, air, water and noise of the college
- To document the waste disposal system
- To estimate the Energy requirements of the college

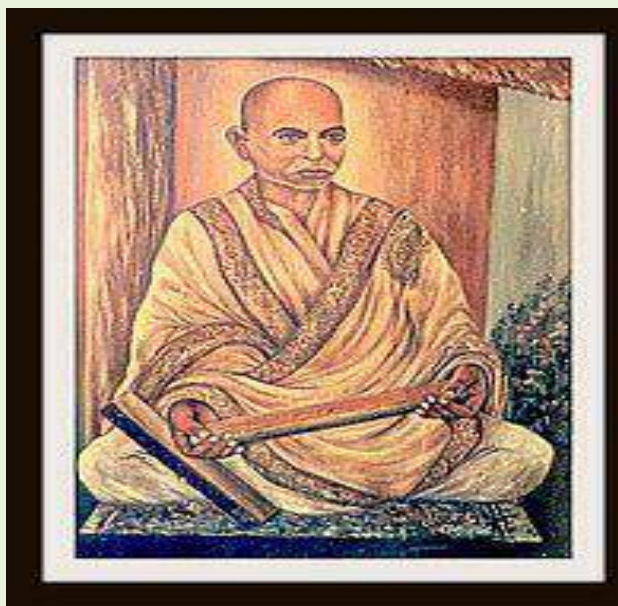
METHODOLOGY:

The purpose of the green audit of S C S (A) College, Puri is to ensure that the practices followed in the campus are in accordance with the Green Policy of the country. The methodology includes: collection of data, physical inspection of the campus, observation and review of the documentation and data analysis.

ABOUT THE COLLEGE:

S C S (A) College, Puri is the one of the prestigious and premier academic institution under the higher education department of Odisha. Located in the centre of holy city, Puri, the cultural capital of Odisha and spiritual cradle of millions of Hindus, this college was started and named as Puri College by Govt. of Odisha in Puri Zilla School in 1944. The college and school functioned as a twin institution till 1947 under the administrative control of the principal of the college. In 1949, the college was renamed as Samanta Chandra Sekhar College after the great Odia scholar-astronomer, Mahamahapadhyaya Chandra Sekhar Sing Samanta Harichandan Mohapatra, who knew more astronomy than any other scientist of the modern world. His love for the space research, learning for the celestial bodies and vision are epitomized by this college. He continues to remain the perennial source of inspiration for generations of students who get an opportunity to avail co-education in this college.

This college became a lead college of this state in 1990 and an autonomous college in 1999. It was declared a college with potential for Excellence by the UGC and was accredited grade 'A' by NAAC which added colourful feather to its cap.



VISION & MISSION VISION STATEMENT:

OUR VISION

To evolve as an eminent Centre of Learning with total commitment to provide career focused technical training aimed at excellence in interdisciplinary education, research and innovation in order to produce socially responsible and synergetic leaders with a global profile.

OUR MISSION

The Samanta Chandra Sekhar (A) College seeks to enrich the academic experience of students to help them meet the evolving needs of society. We aspire to realise our mission as follows:

- Conduct UG programs that integrate global awareness, communication skills and team building across the curriculum.
- Run Post graduate education programs to prepare students for interdisciplinary research and advanced problem solving with focus on career advancement.
- Provide an atmosphere to facilitate personal commitment to the educational success of students in an environment that values diversity and community.
- Inculcate a high regard for ethical principles and an understanding of human and environmental realities.
- Provide state-of-the-art facilities and effective delivery of high quality content by qualified faculty members to build the notion of lifelong learning.
- Conduct scholarly activities that create and transfer cutting-edge knowledge in the area of engineering and technology.
- Create a highly successful alumni base that contributes to global society.

THE VISION AND MISSION STATEMENTS ARE COMMUNICATED TO ONE AND ALL, THE STAKEHOLDERS THROUGH:

- College Website
- Prospectus
- College Calander
- College Magazine “Nila Darpan”
- Display Board placed at the main entrance gate and at different places on the college campus

GREEN AUDITING:

The college has adopted the 'Green Campus' system for environmental conservation and sustainability. There are main three pillars i.e. zero environmental foot print, positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO₂ emission, energy and water use, while creating atmosphere where students can learn and be healthy.

LAND USE ANALYSIS, S.C.S (A) COLLEGE, PURI, ODISHA (As on 10-07-2020):

GENERAL OVERVIEW OF THE CONCEPT OF LANDUSE

Land use refers to man's activities and the various uses which are carried on and derived from land. Viewing the earth from space, it is now very crucial in man's activities on natural resource. In situations of rapid changes in land use, observations of the Earth from space give the information of human activities and utilization of the landscape.

Remote sensing and GIS techniques are now providing new tools for advanced land use mapping and planning. The collection of remotely sensed data facilitates the synoptic analyses of earth system, functions, patterning, and change in the local, regional as well as at global scales over time. Satellite imagery particularly is a valuable tool for generating land use map.

METHODOLOGY ADOPTED FOR LAND USE MAPPING

Three types of data that are GPS points, field survey data and Google earth data for Geo referencing have been used in this study. Land use map of the study area have been prepared using the above three types of data with the help of ArcGis Pro software.

DATA PROCESSING AND ANALYSIS

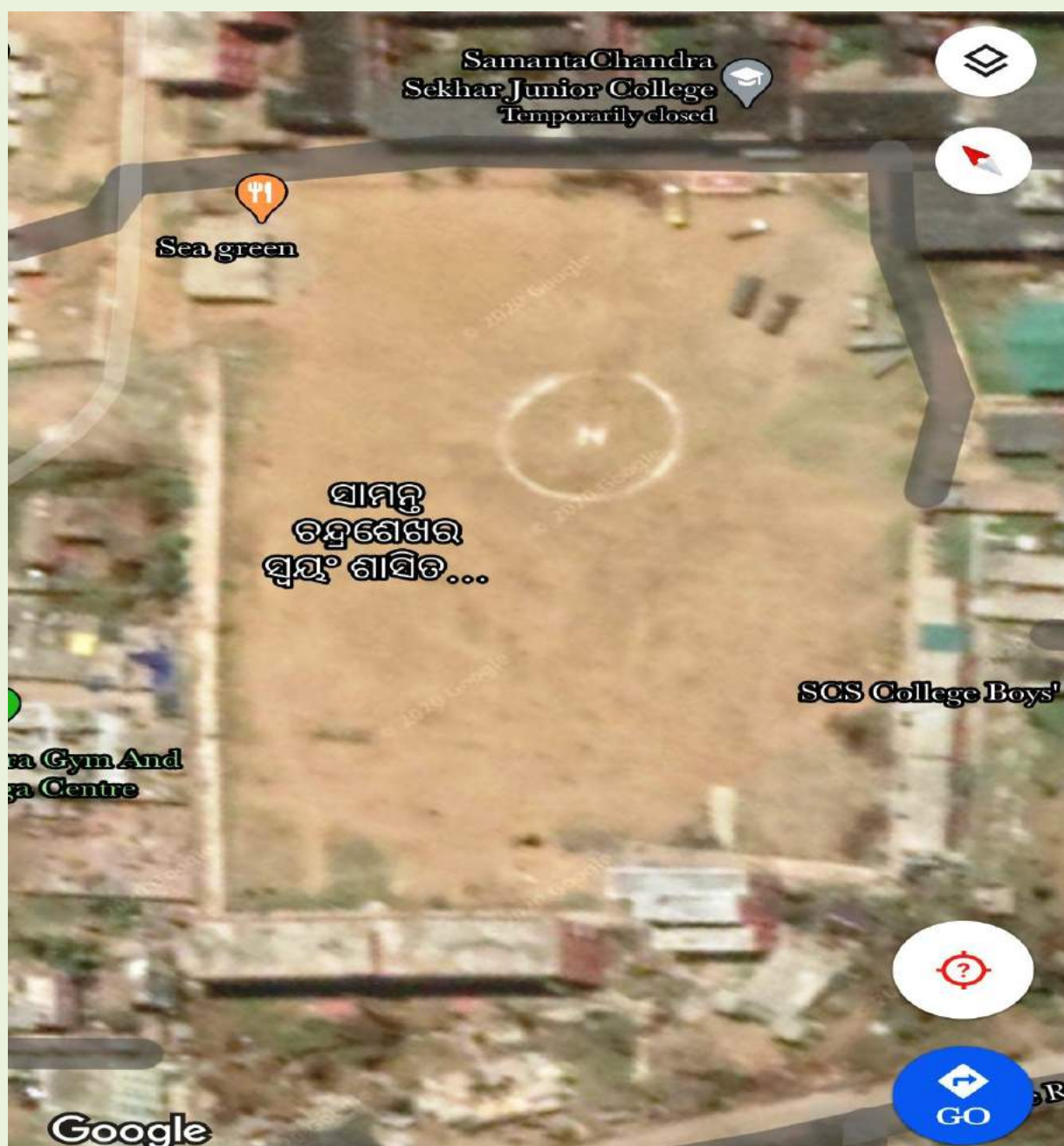
Land use map preparation is executed through the following steps:

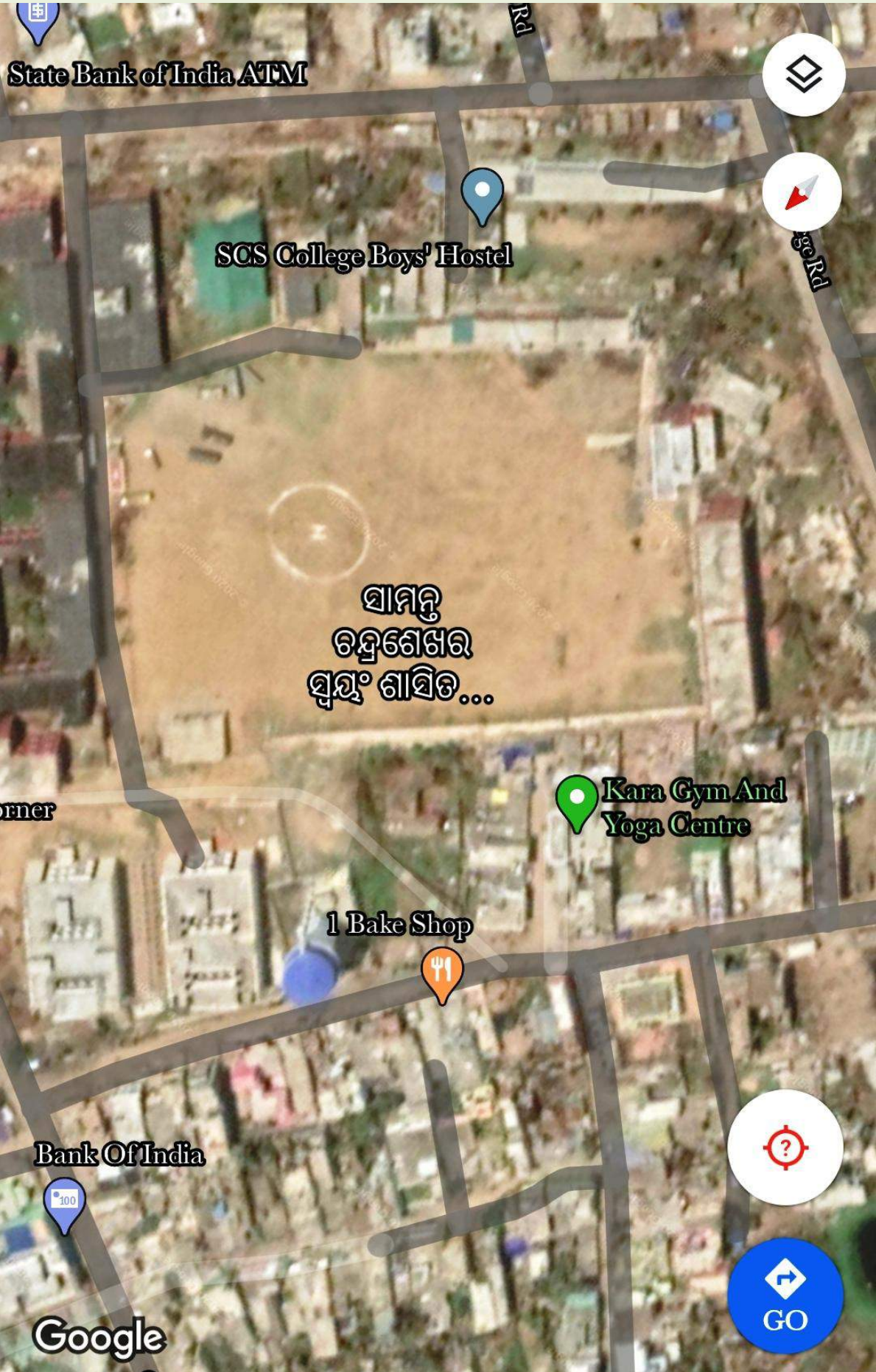
Acquisition of data (Location: 19.4823° N, 85.4942° E), Geo-coding and Geo referencing of satellite imageries by extracting the ground control points. Supervised classification was carried out with the aid of ground truth data collected during field survey. Scanning and digitization of maps and editing of all the Geo referenced maps were done using GIS. Data manipulation and analysis and linking the spatial data with the attribute data for creation of topology was carried out using GIS software. Creation of GIS output in the form of land use map showing various land use have been prepared.

Therefore, attempt has been made in this study to map land use for S C S (A) College, Puri, Odisha with a view to detect the land consumption in the built-up land area using both remote sensing and GIS techniques.

GEOGRAPHICAL LOCATION WITH CAMPUS MAP IN SCALE

The college has a sprawling pollution-free campus spread over 42 acres of land in the heart of District Puri. Puri is the cultural capital of Odisha. It has an ideal geographical location with the proximity to the important city of the region i.e. Bhubaneswar. The college is located at 1.5 kms from Puri Railway Station, 60 kms from Bhubaneswar Airport. The Google aerial views of College Campus Part1 and Part 2 have been shown in Photo 1 and 2 respectively which are showing different college buildings, sports stadium, hostels and residential areas.

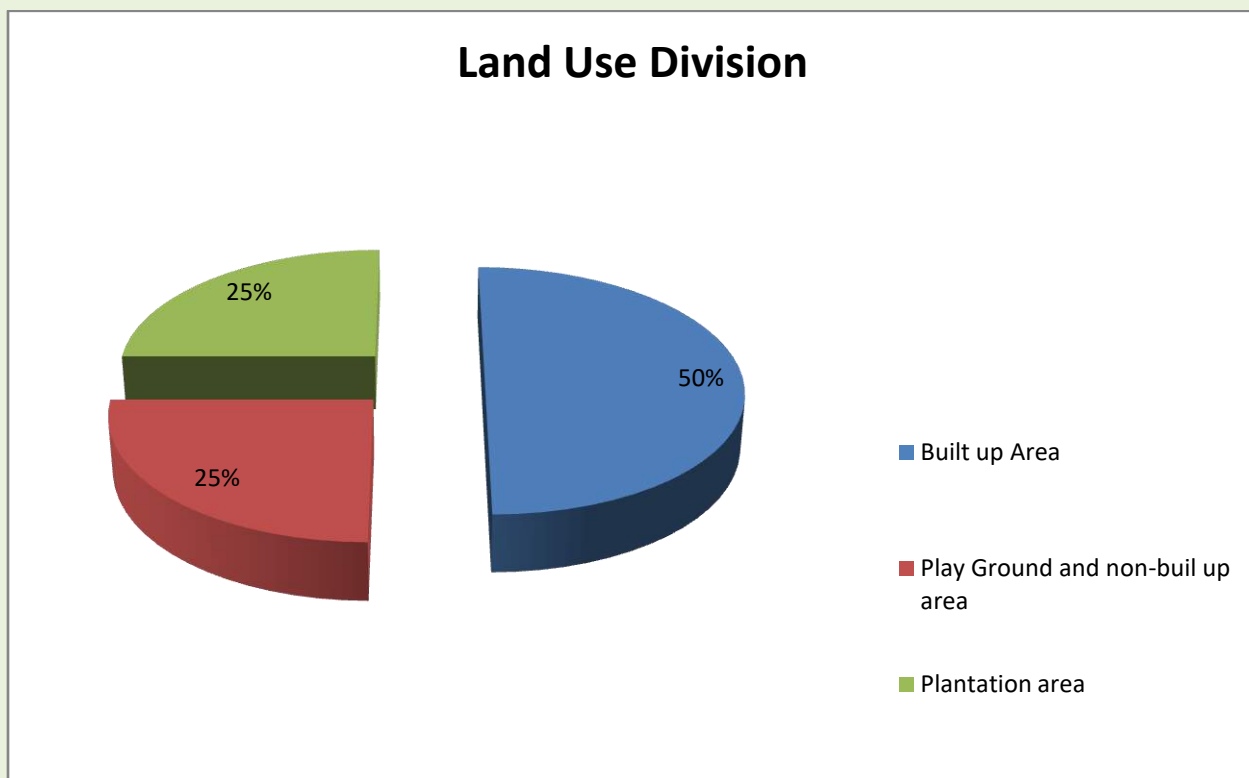




LAND USE DATA OF S C S (A) COLLEGE, PURI, ODISHA

| <i>CATEGORIES OF LAND USE</i> | <i>AREA (m²)</i> |
|-----------------------------------|-----------------------------|
| PLANTATION AREA | 42,491.99 |
| BUILT UP AREA (INCLUDE ROADS) | 84,983.98 |
| PLAY GROUND AND NON BUILT UP AREA | 42,491.99 |
| TOTAL AREA | 1,69,967.97 |

The total area of S C S (A) College, Puri is 1,69,967.97 m² out of which the built up area (include Roads) is 50% (i.e 84,983.98 m²), playground and non built up area is 25% (i.e. 42,491.99 m²) and plantation area is 25% (i.e. 42,491.99 m²).



FLORAL DIVERSITY :

S C S (A) College is within the geo-position between 19.4823° N, 85.4942° E in Puri, Odisha, India. It encompasses an area of about 42 Acres. The area is immensely diverse with a variety of tree species performing a variety of functions. Most of these tree species are planted in different periods of time through various plantation programmes organised by the authority and have become an integral part of the college. The trees of the college have increased the quality of life, not only the college fraternity but also the people around of the college in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, and supporting wildlife, controlling climate by moderating the effects of the sun, rain and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer. Many species of birds are dependent on these trees mainly for food and shelter. Nectar of flowers and plants is a favourite of birds and many insects. Leaf – covered branches keep many animals, such as birds and squirrels, out of reach of predators. Different species display a seemingly endless variety of shapes, forms, texture and vibrant colours. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument – like quality. We often make an emotional connection with these trees and sometime become personally attached to the ones that we see every day. A thick belt of large shady trees in the periphery of the college have found to be bringing down noise and cut down dust and storms. For better understanding of students a well composed 'Botanical Garden' is maintained in the leftside of the college entrance. Thus, the college has been playing a significant role in maintaining the environment of the entire Puri town and its surrounding areas. The following are the tree species with whom we are being attached-

| SL.No | Name of the plant species | No. | Family | Common Name |
|-------|--------------------------------|-----|-----------|-------------|
| 01 | <i>Eucalyptus sp.</i> | 3 | Myrtaceae | Gums tree |
| 02 | <i>Artocarpus heterphyllus</i> | 2 | Moraceae | Jackfruit |
| 03 | <i>Areca catccheau</i> | 1 | Arecaceae | Beetle Nut |
| 04 | <i>Syzygium cumini</i> | 2 | Myrtaceae | Jamun Tree |
| 05 | <i>Psidium guajava</i> | 3 | Myrtaceae | Guava |
| 06 | <i>Pongamia pinnata</i> | 4 | Fabaceae | Karanja |

| | | | | |
|-----------|----------------------------------|---|---------------|--------------------|
| 07 | <i>Ficus religiose</i> | 5 | Moraceae | Osta |
| 08 | <i>Grevillea robusta</i> | 1 | Proteaceae | Silver Oak |
| 09 | <i>Neolamarckia cadamba</i> | 2 | Rubiaceae | Kadam |
| 10 | <i>Dalbergia sisoo</i> | 3 | Fabaceae | Sisu |
| 11 | <i>Tamarindus indica</i> | 5 | Fabaceae | Tamarind |
| 12 | <i>Polyalthial longifolia</i> | 4 | Annonaceae | Ashok Tree |
| 13 | <i>Terminalia arjuna</i> | 3 | Combretaceae | Arjun |
| 14 | <i>Aegle marmelos</i> | 2 | Rutaceae | Bael |
| 15 | <i>Bombax ceiba</i> | 1 | Malvaceae | Red Cotton Tree |
| 16 | <i>Citrus maxima</i> | 1 | Rutaceae | Pomello |
| 17 | <i>Zizyphus jujuba</i> | 5 | Rhamnaceae | Bogori |
| 18 | <i>Alstonia scholaris</i> | 2 | Apocynaceae | Devil Tree |
| 19 | <i>Cedrus atlantic</i> | 1 | Pinaceae | Atlas |
| 20 | <i>Cocus nucifera</i> | 7 | Arecaceae | Coconut |
| 21 | <i>Ficus benghalensis</i> | 5 | Moraceae | Banyan Tree |
| 22 | <i>Magnifera indica</i> | 4 | Anacardiaceae | Mango |
| 23 | <i>Tectona grandis</i> | 2 | Lamiaceae | Teak |
| 24 | <i>Azadirachta indica</i> | 3 | Meliaceae | Neem |
| 25 | <i>Borassus flabellifer</i> | 1 | Arecaceae | Tall Palm |
| 26 | <i>Taebarnaemonta divaricate</i> | 2 | Apocyanaceae | Tagar |
| 27 | <i>Thuja orientalis</i> | 1 | Cupressaceae | Chinese Thuja |

| | | | | |
|----|------------------------------|---|-----------------|----------------|
| 28 | <i>Ziziphus mauritiana</i> | 1 | Rhamnaceae | Indian Jujube |
| 29 | <i>Ficus hispida</i> | 1 | Moraceae | Fig Tree |
| 30 | <i>Pltohorum pterocarpum</i> | 1 | Caesalpiaceae | Yellow Flame |
| 31 | <i>Dillenia indica</i> | 1 | Dilleniaceae | Elephant Apple |
| 32 | <i>Mimus opselengi</i> | 1 | Sapotaceae | Spanish Cherry |
| 33 | <i>Callitropi sprocera</i> | 1 | Ascelepediaceae | King's Crown |
| 35 | <i>Zoysia matrella</i> | 1 | Poaceae | Manilla Grass |
| 36 | <i>Gardenia jasminoides</i> | 2 | Rubiaceae | Tarat |

TABLE 2: SHRUBS

| SL.no | SCIENTIFIC NAME | NO. | FAMILY | COMMON NAME |
|-------|----------------------------|-----|----------------|----------------------|
| 1 | <i>Cordaeum variegatum</i> | 2 | Euphorbiaceae | Garden croton |
| 2 | <i>Ixora coccinea</i> | 1 | Rubiaceae | Jungle Geranium |
| 3 | <i>Cordline terminalis</i> | 1 | Agavaceae | Goodluck Tree |
| 4 | <i>Clitoria ternate</i> | 1 | Fabaceae | Darwin Pea |
| 5 | <i>Ipomoea pescaprae</i> | 1 | Convulvulaceae | Purple Morning Glory |
| 6 | <i>Achyranthes aspera</i> | 1 | Amaranthaceae | Chaff Flower |
| 7 | <i>Caladium bicolor</i> | 2 | Araceae | Elephant ear |
| 8 | <i>Mikania micrantha</i> | 1 | Asteraceae | Humble Plant |
| 9 | <i>Duranta plumeri</i> | 1 | Solanaceae | Hell's Bell |
| 10 | <i>Mimosa pudica</i> | 1 | Fabaceae | Touch-me-not |

HERBS

| SL NO | SCIENTIFIC NAME | NO. | FAMILY | COMMON NAME |
|-------|----------------------------|-----|---------------|----------------------|
| 1 | <i>Rhoeo discolor</i> | 2 | Commelinaceae | Mosses-in-the cardel |
| 2 | <i>Differbachia amoena</i> | 4 | Araceae | Dumb cane |
| 3 | <i>Anisomeless indica</i> | 2 | Lamiaceae | Indian Catmint |
| 4 | <i>Cleoma viscosa</i> | 1 | Capparaceae | Tick weed |
| 5 | <i>Abutilon indicum</i> | 2 | Malvaceae | Indian Abuilum |
| 6 | <i>Tridax procumbens</i> | 1 | Asteraceae | Coat buttons |
| 7 | <i>Pteris cretica</i> | 1 | Pteridaceae | Table fern |
| 8 | <i>Datura stramonium</i> | 1 | Solanaceae | Thorn apple |
| 9 | <i>Cypersro tundus</i> | 1 | Cyperceae | Coco grass |
| 10 | <i>Lecusa aspera</i> | 1 | Lamiaceae | Thumba |

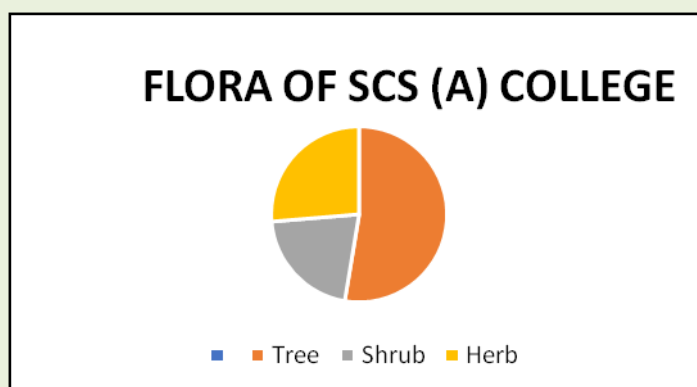
| SL.No | TYPES OF FLORA | FAMILY | NO.OF SPECIES |
|-------|----------------|-----------------|---------------|
| 01 | TREES | Rubiaceae | 4 |
| | | Casealpiniaceae | 1 |
| | | Moraceae | 5 |
| | | Anacardiaceae | 3 |
| | | Rutaceae | 4 |
| | | Annonaceae | 2 |
| | | Fabaceae | 4 |
| | | Dilleniaceae | 2 |

| | | | |
|-----------|----------------------|-----------------------|----------|
| | | Sapodaceae | 3 |
| | | Asclpediaceae | 1 |
| | | Poaceae | 1 |
| | | Malvaceae | 3 |
| | | Cupressaceae | 1 |
| | | Rhamnaceae | 2 |
| | | Apocyanaceae | 2 |
| | | Meliaceae | 2 |
| | | Myrtaceae | 3 |
| | | Proteaceae | 1 |
| | | Combretaceae | 4 |
| 02 | <i>SHRUBS</i> | Euphorbiaceae | 2 |
| | | Rubiaceae | 1 |
| | | Agavaceae | 1 |
| | | Fabaceae | 1 |
| | | Convulvulaceae | 1 |
| | | Amaranthaceae | 1 |
| | | Araaceae | 2 |
| | | Verbanaceae | 1 |
| 03 | <i>HERBS</i> | Commeniniaceae | 2 |
| | | Araceae | 4 |
| | | Lamiaceae | 2 |
| | | Capparaceae | 1 |
| | | Malvaceae | 2 |
| | | Amaranthaceae | 1 |
| | | Asteraceae | 1 |

| | | |
|--|--------------------|----------|
| | Pteridaceae | 1 |
| | Cyperaceae | 2 |
| | Solanaceae | 2 |

Table : Total List Of Flora

| TYPES OF FLORA | FAMILY | NO. OF SPECIES |
|----------------|-----------|----------------|
| Tree | 20 | 46 |
| Shrub | 8 | 10 |
| Herb | 10 | 18 |



Ficus benghalensis (Family: Moraceae)



Mangifera indica (Family: Anacardiaceae)



Citrus limon (Family: Rutaceae)



Gardenia jasminoids(Family: Rubiaceae)



Cordaeum variegatum(Family-Euphorbiaceae)



Polyalthia longifolia (Family:Annonaceae)



Pltophorum pterocarpum(Family:Ceaselpiniaceae)



Dillenia indica(Family:Dilleniaceae)



Pongami pinnata(Family: Fabaceae)



Neolamarkia cadamba(Family:Rubiaceae)



Mimusops elengi (Family:Sapotaceae)



Zoysia matrella (Family: Poaceae)



Rhoeo discolor (Family:Commelinaceae)



Ixora coccinea(Family:ubiaceae)



Cordaeum variegatum (Family:Euphorbiaceae)



Cordiline terminalis(Family:Agavaceae)



Diffenbachia amoena(Family:Araceae)



Clitoria ternate(Family:Fabaceae)



Anisomeless indica (Family:Lamiaceae)



Ipomoea pescarpae(Family:Convolvulaceae)



Abutilon indicum(Family: Malvaceae)



Cleome viscosa (Family: Capparaceae)



Pteris cretica(Family:Pteridaceae)



Achyranthes aspera(Family:Amaranthaceae)



Ficus religiosa(Family: Moraceae)



Caladium bicolour(Family: Araceae)



Mikania micrantha(Family:Asteraceae)



Datura stramonium(Family:Solanaceae)



Hibiscus rosasinesis(Family:Malvaceae) ;



Duranta plumeri Var.*Goldiana*(Family:Verbenaceae)



Cycas revolute(Family:Cupressaceae)



Aegle marmelon(Family: Rutaceae)



Cyperous rotundus (Family: Cyperaceae)



Ficus hispida (Family: Moraceae)



Ziziphus mauritiana (Family: Rhamnaceae)



Thuja orientalis (Family: Cupressaceae)



Terbernaemonta divaricate (Family: Apocyanaceae)



Leucas aspera (Family: Lamiaceae)



Azadiracta indica(Family:Meliaceae)



Mikania micrantha (Family:Asteraceae)



Combretum indicum(Family: Combretaceae)



Calotropis procera(Family:Asclepiaceae)



Commelina benghalensis(Family:Commelinaceae)



Mimosa pudica(Family: Fabaceae)

FAUNAL DIVERSITY:

S C S (A) College is located in Puri District of Odisha. The highest temperature is recorded 38°C just prior to the onset of monsoon (around May- early June). Summer rain is normal, and is principally caused from late June to August by the moisture-laden South-West Monsoon, on striking the Himalayan foothills of the north. The climatic condition of the Puri district as a whole and S C S (A) College in particular is very suitable for a wide variety of flora and fauna to support its rich biodiversity. The faunal Diversity of S C S (A) College campus has been studied and documented as below:

| SL No | Class | Common Name | Scientific Name |
|-------|----------|----------------------|----------------------------------|
| 1 | Mammalia | Indian Pariah Dog | <i>Canis lupus</i> |
| 2 | Mammalia | Cow | <i>Bos taurus</i> |
| 3 | Mammalia | Squirrel | <i>Funambulus Palmarum</i> |
| 4 | Mammalia | Goat | <i>Capra aegagrus</i> |
| 5 | Mammalia | Indian Monkey | <i>Macaca silenus</i> |
| 6 | Mammalia | Mouse | <i>Mus musculus</i> |
| 7 | Aves | Blue-rock pigeon | <i>Columba livia</i> |
| 8 | Aves | Asian Koel | <i>Eudynamys scolopaceus</i> |
| 9 | Aves | Crow | <i>Corvus Splendens</i> |
| 10 | Aves | Great egret | <i>Ardea alba</i> |
| 11 | Aves | Black Kite | <i>Milvus migrans</i> |
| 12 | Aves | Parrot | <i>Psittacula krameri</i> |
| 13 | Aves | Oriole | <i>Oriolus larvatus</i> |
| 14 | Aves | Sparrow | <i>Spicella artogularis</i> |
| 15 | Aves | Common Myna | <i>A tristis</i> |
| 16 | Aves | Orange headed thrush | <i>Geokichle citrina</i> |
| 17 | Reptilia | Lizard | <i>Hemidactylus flaviviridis</i> |

| | | | |
|----|------------|-------------------|------------------------------------|
| 18 | Reptilia | Cobra | <i>Naja naja</i> |
| 19 | Reptilia | Garden Lizard | <i>Calotes versicolor</i> |
| 20 | Amphibia | Asian Common-toad | <i>Duttaphrynus melanotstictus</i> |
| 21 | Mollusca | Snail | <i>Cornu aspersum</i> |
| 22 | Arthropoda | Honey Bee | <i>Apis indica</i> |
| 23 | Arthropoda | Common Mormon | <i>Papilio polytes</i> |
| 24 | Arthropoda | Banded peacock | <i>Papilio budhha</i> |
| 25 | Arthropoda | Spotted angles | <i>Caprona agama</i> |
| 26 | Arthropoda | Molted Emigrant | <i>Catopsilia pyranthe</i> |
| 27 | Arthropoda | Peacock pansy | <i>Junonia almana</i> |
| 28 | Arthropoda | Plain tiger | <i>Danus chrysippus</i> |
| 29 | Arthropoda | Blue Pansy | <i>Junonia orithya</i> |
| 30 | Annelida | Earthworm | <i>Pheretima posthma</i> |



Pic -1 (Indian Cow)



Pic-2 (Indian Monkey)



Pic-3(Indian Pariah Dog)



Pic-4(blue-rock pigeon)



Pic-5 (Common Myna)



Pic-6(Common tiger)



Pic-7 (Common mormon)



Pic-8 (Crow)



Pic-9 (Snail)

WEATHER DATA OF S C S (A) COLLEGE, PURI:

Station: PURI , ODISHA, INDIA

Location: 19.4823° N, 85.4942° E

In Puri, the climate is warm and temperate. The summers are much rainier than the winters in Puri. The average annual temperature in Puri is 33 °C. and precipitation level is about 770 mm.

The driest month is generally November. There is 4 mm of precipitation in November. The greatest amount of precipitation occurs in July, with an average of 220 mm. With an average of 38. °C, June is the warmest month. The lowest average temperatures in the year occur in January, when it is around 13.3 °C. The precipitation varies 220 mm between the driest month and the wettest month. The variation in temperatures throughout the year is 20.3 °C.

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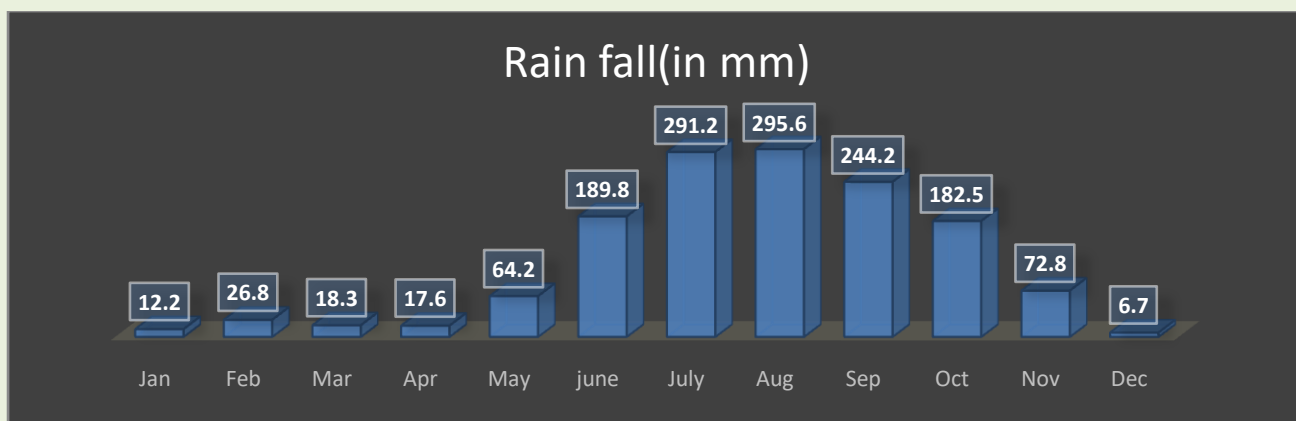


Figure indicating month wise rainfall in S.C.S (A) College, Puri

AIR QUALITY IN PURI AND S C S (A) COLLEGE:

The ambient air quality data for Puri and S C S (A) College for the last one year shows that there are very less polluted particles in ambient air; AQI for SO₂ & NO_x parameters are within the range of Indian living standards, there are a number of factors responsible for this cleanliness, calmness and serenity in this area. Firstly, population which is most responsible for all the problems and hurdles in smooth living is lower here as compare to other districts of Odisha. Secondly, in this area more trees have been planted, after Fani- cyclone in 2019, as compared to other cities. Furthermore, no air polluting industry is established here not even in a radius of 10 Km of Puri area. The NH-316 is also approximately 5-6 kilometres away from the campus, which might be responsible for heavy density traffic throughout the year and thus might be causing lot of vehicular emissions as well as a lot of dust emissions due to the movement of vehicles.

Therefore, the ambient air quality of Puri Area falls in between moderate to rich quality state. The Odisha Pollution Control Board is pondering over the various possibilities to reduce the air pollution for the improvement of ambient air quality with respect to AQI is concerned. However, the annual average value of PM₁₀, SO₂, NO_x in the ambient air quality of Puri city falls in the range of 50-62 µg/m³, 3-5 µg/m³, 10-12 µg/m³ for most of the months, as such, the graded response action plan to eradicate the problem

AIR QUALITY DETERMINATION

Satisfactory air quality index (OVERALL=58) in Puri, Odisha, India on dated 10th July 2020:

| Parameter | Result (Range) |
|---------------------|---|
| NO ₂ | 23.4 µg/m ³ , AQI 26 Very Good |
| NO | 09.09 µg/m ³ , AQI 10 Good |
| O ₃ | 30.49 µg/m ³ , AQI 31 Good |
| PM _{2.5} | 28.13 µg/m ³ , AQI 28 Good |
| PM ₁₀ | 77.2 µg/m ³ , AQI 79 S a t i s f a c t o r y |
| CO | 35.0 µg/m ³ , AQI 18 |
| Humidity | 96.0 % |
| Barometric Pressure | 1013 millibar or hPa |
| Wind Speed | 10-15 km/s |
| Wind Direction | 28.0013 degrees |
| Sun Rise | 06:08 AM |
| Sun Set | 06:16 PM |
| Moonrise | 06:25 PM |
| Moonset | 05:45 AM |

WATER ANALYSIS REPORT OF S C S (A) COLLEGE:

Water quality testing is important because it identifies contaminants and prevents water-borne diseases. Drinking or using contaminated water can result in severe illness or death. That is why it is important to ensure that drinking water is safe, clean and free from bacteria and disease.

The parameters for water quality are determined by the intended use. Work in the area of water quality tends to be focused on water that is treated for human consumption, or in the environment.

Drinking water indicators:

The following is a list of indicators often measured by situational category:

- Alkalinity
- Color of water
- pH value
- Taste and odor (geosmin, 2-Methylisoborneol (MIB), etc.)

- Dissolved metals and salts (sodium, chloride, potassium, calcium, manganese, magnesium)
- Microorganisms such as fecal coliform bacteria (*Escherichia coli*), *Cryptosporidium*, and *Giardia lamblia*; see Bacteriological water analysis
- Dissolved metals and metalloids (lead, mercury, arsenic, etc.)
- Dissolved organics: colored dissolved organic matter (CDOM), dissolved organic carbon (DOC)
- Heavy metals

MODERN INDUSTRIAL TECHNICAL SOLUTIONS PVT. LTD

(A Govt. Approved Testing Laboratory)

Pranabananda Marga, Baliapanad, Puri-752001

Mob - +91-8763762425

Date of Issue- **21.07.2020**

Ref No-541/2020

Sample Collected From- SCS (A) COLLEGE , PURI-1

Date of Collection – **17/07/2020**

Type of Sample- **Drinking Water**

| SR Number | Parameter | Permissible limits | Desirable limits | Results |
|-----------|---------------------------|--------------------|------------------|-----------|
| 1 | pH value | 6.5 to 8.5 | 6.5 to 8.5 | 7.19 |
| 2 | Dissolved solids | Max. 2000 mg/l | Max 500 mg/l | 202 mg/l |
| 3 | Total alkalinity as CaCo3 | Max 600 mg/l | Max 200 mg/l | 316 mg/l |
| 4 | Chlorides As Cl | Max 1000 mg/l | Max 250 mg/l | 20 mg/l |
| 5 | Sulphate as SO4 | Max 400 mg/l | Max 200 mg/l | N. D |
| 6 | Nitrates As NO3 | Max 45 mg/l | Max 45 mg/l | 11 mg/l |
| 7 | Fluoride as F | Max 1.5 mg/l | Max 1.0 mg/l | 0.6 mg/l |
| 8 | Calcium as Ca | Max 200 mg/l | Max 75 mg/l | 75 mg/l |
| 9 | Magnesium as Mg | Max 100 mg/l | Max 30 mg/l | 22 mg/l |
| 10 | Total Hardness as CaCo3 | Max 600 mg/l | Max 200 mg/l | 268 mg/l |
| 11 | Sodium | --- | --- | 44 mg/l |
| 12 | Potassium | --- | --- | 2.0 mg/l |
| 13 | Arsenic, mg/l | Max 0.05 mg/l | Max 0.01 mg/l | N.D |
| 14 | Chromium, mg/l | Max 0.05 mg/l | Max 0.05 mg/l | N.D |
| 15 | Cadmium, mg/l | Max 0.003 mg/l | Max 0.003 mg/l | N.D |
| 16 | Lead, mg/l | Max 0.01 mg/l | Max 0.01 mg/l | N.D |
| 17 | Iron as Fe | Max 0.3 mg/l | Max 0.3 mg/l | 0.07 mg/l |
| 18 | Coliform/100 ml | Absent/100 ml | Absent | Absent |


21.07.20.

NOISE LEVEL IN THE SURROUNDING OF S.C.S(A) COLLEGE:

The human ear is constantly being assailed by man-made sounds from all sides, and there remain few places in populous areas where relative quiet prevails. There are two basic properties of sound:

- Loudness and
- Frequency.

Loudness is the strength of sensation of sound perceived by the individual. It is measured in terms of Decibels. Just audible sound is about 10 dB, a whisper about 20 dB, library place 30 dB, normal conversation about 35-60 dB, heavy street traffic 60-0 dB, boiler factories 120 dB, jet planes during take-off is about 150 dB, rocket engine about 180 dB. The loudest sound a person can stand without much discomfort is about 80 dB. Sounds beyond 80 dB can be safely regarded as Pollutant as it harms hearing system. The WHO has fixed 45 dB as the safe noise level for a city. For international standards a noise level up to 65 dB is considered tolerate. Loudness is also expressed in sones. One sone equals the loudness of 40 dB sound pressure at 1000 Hz. Frequency is defined as the number of vibration per second. It is denoted as Hertz (Hz).

MATERIALS, STUDY AREA & METHODS

Noise level meter or noise measuring app, Noise test pro (version: 1.0.2), was used to measure the noise level. Noise test pro detect of any noise, music or sound in your surroundings. It will tell you maximum, minimum and average decibels.

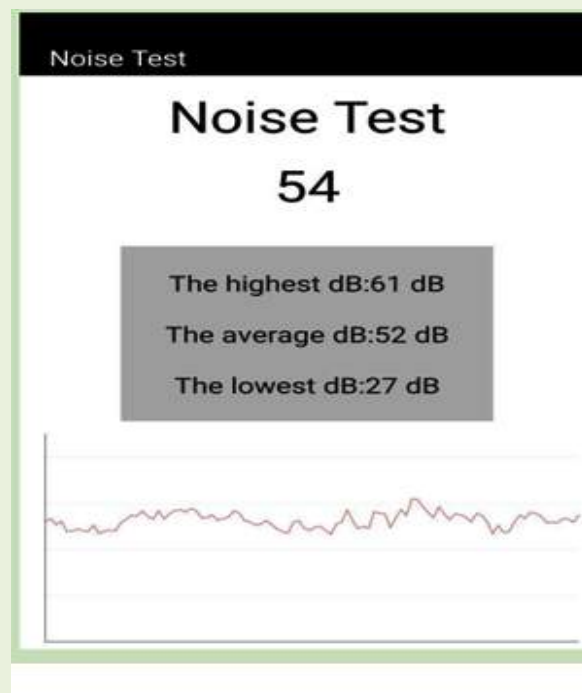


Figure: Noise Measurement by Noise Test Pro App

WASTE DISPOSAL:

Waste disposal are the activities and actions required to manage waste from its inception to its final disposal. This includes the collection, transport, treatment and disposal of waste, together with monitoring and regulation of the waste management process.

The waste from all around the college is separated daily as wet and dry waste in different bags which are disposed separately. Dry waste includes paper, cardboard, glass tin cans etc. on the other hand; wet waste refers to organic waste such as vegetable peds, left-over food etc. Separation of waste is essential as the amount of waste being generated today causes immense problem. The material was composted and evaluated as a fertilizing material. Disposal of these waste results in the production of good quality organic manure that can be used as soil amendments and source of plant nutrients.

With smart initiatives like “Think Green Campus Model”, waste management is helping colleges and universities to achieve a higher level of environmental performance. By reusing or recycling we are contributing to the conservation of natural resources, saving energy, helping to protect the environment, reducing landfill. We will also reduce our impact on the environment by minimizing the carbon emissions associated with both disposing of old products and obtaining new ones. S C S (A) College adopts environment friendly practices and takes necessary actions such as – energy conservation, waste recycling, carbon neutral etc. The biological reusable waste are processed as organic manure for the plants available in the college campus and the other solid waste generated in the college campus is taken to the community bin of Puri municipality for recycling and disposal.



VEHICLE FREE CAMPUS:

S C S Green initiative is a bold step regarding control of environmental pollution and to create a healthy ambience in this area. Vehicular traffic prohibited in our campus in the year 2016. In the first phase use of two wheelers and four wheelers are prohibited inside the campus by making an alternative parking place in the extreme north side of college campus. By doing this we successfully achieved the ambient noise level in the campus.

ELECTRICAL POWER CONSUMPTION:

S C S (A) College, being one of the largest colleges of Odisha, consumes on an average 131 kW- hr (units) of electricity which turns out to be 1199656 kW-hr per year only to maintain its volumetric activities throughout the year. The authority keeps on replacing the old filament bulbs, CFL bulbs and tube lights by low energy consuming LED bulbs and LED tubes and bulky high-power consuming fans by energy efficient fans in order to keep the electricity consumption of the college as low as possible.

In addition to making Environmental Studies a very vital subject in our syllabus, S C S (A) College, Puri has gone a step further by putting that theory into practice. The college has installed many sets of solar panel operated street lights, thus moving towards a more reliable and greener option and **reducing its carbon footprint.**

EFFORTS AND INITIATIVES FOR GREEN S.C.S MISSION:

After devastation of severe cyclonic storm Fani-2019, our college lost its major floral and faunal beauty. We also faced severe drawbacks in waste management and solar units. Under the leadership of our esteem Principal Madam and with the cooperation of Youth redcross wing of our college and District administration, Puri we ensure massive plantation work in 2019-20. To aware all the student regarding environmental values our Botany Department organized silent rally inside the campus. Under the guidance of faculty members of Zoology Department our students participated in biodiversity walk, community awareness programmes in local villages. Our college also took initiatives to establish a butterfly garden and carp breeding pond.

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