



# **NARASINGH CHOUDHURY AUTONOMOUS COLLEGE, JAJPUR, ODISHA**

**NAAC**

## **GREEN AUDIT REPORT**

**Session- 2018-19 to 2022-23**



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## **EXECUTIVE SUMMARY**

Sustainable living is a life style that aims to reduce the negative impact of the human activity on the environment while still supporting quality of life. It involves making choices that use resources in a way that allows them to replenish and that benefit the planet for future generation.

“Eco-sustainable” means adopting a lifestyle that is respectful of the environment and that allows maintaining a good state of health over time. Education also plays a role in sustainable living as people with higher level of education are more likely to manage environmental friendly choices.

The concept of “Green Campus” is an integration concept in the education research and community service system in environmental management which is also the aim and objective to fulfill the SDG 2030. Narasingh Choudhury Autonomous College believes that there is an urgent need to address these fundamental environmental 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.

It works on the several facets of Green Campus including Water Conservation, Tree Plantation, Waste Management, Paperless Work, and Alternative Energy. 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. Initially a questionnaire survey was conducted to know about the existing resources of the campus and resource consumption pattern of the students and staff in the college.

In order to assess the quality of water and soil, water and soil samples were collected from different locations of the college campus and analyzed for its parameters. Collected data was grouped, tabulated and analyzed. Finally a report pertaining environmental management plan with strength, weakness and suggestion on the environmental issue of campus is documented.

## **INTRODUCTION**

Green audit is a useful tool to determine how and where the most energy or water resources are being used, the type and volume of waste generated and can then considerations be given on how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. Environmental audit or Green audit reflects evaluations that help us to identify environmental compliance and management system, implementation gaps, along with related corrective actions. Overall, it plays a vital role in imparting a better understanding of Green impact on campus to staff and students.

## **NEED FOR GREEN AUDIT**

Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that accredits the institution according to the scores assigned at the time of accreditation. NAAC has made it mandatory that all Higher Educational Institutions should submit an Annual Green Audit Report. Moreover, it is part of Institutional Social Responsibility (ISR) of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

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. In this context, it becomes imperative to adopt the system of the Green Campus for the Institutes which will lead to sustainable development. Besides, it also reduces a sizable amount of atmospheric carbon dioxide from the environment.

## **OBJECTIVES OF THE GREEN AUDIT**

1. Creating awareness among students and staff concerning holistic use of environment and its sustainability;
2. Understanding the current practices of sustainability with regard to the use of water and energy, generation of wastes, transportation, purchase of goods, etc;
3. Establishing a baseline of existing environmental conditions with focus on natural and physical environment;
4. To create a report that document baseline data of good practices and

provide strategies and action plans towards improving environmental quality for future.

5. To conduct SWOT analysis and take appropriate action with a guideline both for students and staff for a better eco-environment.

### **ABOUT THE COLLEGE**

Narasingh Choudhury Autonomous College is a NAAC accredited Government college of Department of Higher Education Government of Odisha established in 1946 (Pre independent era). It has established its reputation in not only imparting high quality education but also in emphasizing discipline. The College maintains high standards of excellence in the academic sphere and in the physical amenities and facilities intended to implement the educational programme. The College endeavours to enroll students who hold high standards of performance, discipline and achievement.



In addition the institution takes care to impart updated and high quality education throughout the year. Special care is taken in the matter of students becoming qualified as well as competent to face the challenges and every effort is taken to transform the students into well rounded personality with strong confidence and sound character making no compromise in perfection, morality, dedication and commitment. Being Engineering curriculum which is expected to provide a broad

foundation of general education and a reasonable amount of specialization, a diversified programme of campus activities-social, recreational, cultural and spiritual-supplements and complements the academic study and provides facilities and opportunities for the development of individual talent, personal relationship and creative group life with high moral standards. The campus is spread over an area of 24.05 acres of land with the green belt area of 3 acres.

The college offers 23 Undergraduate and Post Graduate courses. Presently there are 2833 students and 66 teaching faculty in the college which is promising to grow rapidly. The College offers job-oriented courses, extra-curricular activities of various clubs and technologically advanced facilities accessible to the faculty, the students and the support staff. Here, each individual is encouraged to step beyond the confines of academic and administrative disciplines to explore and intervene in the larger interests of the NCAC community that thrives on participation and the desire to venture into newer vistas.

### **METHODOLOGY**

The methodology that is followed in order to perform green audit includes different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations was adapted.

#### **On site visit**

Green Audit Team visited various sites and the key focus of the visit was on assessing the status of the green cover of the Institution, their waste management practices and energy conservation strategies etc. The sample collection (water, air) was carried out during the visits. The water samples from bore water were taken and air samples from different places of the campus were collected. The sample collection, preservation, and analysis were done in the scientific manner as prescribed by the standard procedures.

#### **Focus Group Discussion**

The Focus Group discussions were held with staff members and the students focusing various aspects of Green Audit. The discussion was focused on identifying the attitudes and awareness towards environmental issues at the institutional and local level.

## **Strategies of Waste Management**

With the help of teaching non teaching students Administrative officers workers the audit team interacted and accessed the waste generation and disposal along with treatment facilities of the college. The monitoring and evaluation was conducted basing on a comprehensive questionnaire-survey method. The study covered the following areas to summarize the present status of the environmental management system of the Institution.

- 1. Water Management**
- 2. Waste Management**
- 3. E-Waste Management**
- 4. Green area management**
- 5. Environmental monitoring**

### **OBSERVATONS AND RECOMMENDATONS**

The study observed that the main source of water for the institute and hostels are received from 12 storage wells. Water is used for drinking purpose, toilets and gardening. The waste water from the RO water purifier is used for gardening purpose. During the survey, no loss of water is observed, neither by any leakages, or by over flow of water from overhead tanks. The data collected from all the departments is examined and verified. On an average the total use of water in the college is 32000L/day, which include 12,000 L/day for domestic, 10,000 L/day for gardening purposes and 10,000 L/day for drinking purpose.

SL NO	PARAMETERS	OBSERVATONS
1	Sources of water	Storage wells
2	No of Storage wells	12
3	No of Motors used	8
4	Water level	Nominal
5	Any wastage/leakage	No
6	Waste water sources	Hostel, canteen lab



## **Rain water harvesting**

Rain water harvesting units are also functioning for recharging groundwater level. There are soaking pits available wide spread all over the campus. The collected rooftop water is collected in the recharge wells. While, the rain water from paved area are sent to recharge wells through storm water drains. All the recharge wells are cleaned manually for every year.



## **Drinking water**

The water used for drinking purposes is clean and well-maintained. RO water purifier/cooler is installed in the campus and hostels which are available on all floors of the college/hostels to provide safe drinking water.



## **Water quality assessment**

Water samples from the college/hostels were collected in regular intervals and analyzed for its quality parameters. The major parameters analyzed include colour, odour, turbidity, dissolved oxygen, acidity, alkalinity, chloride, hardness, pH, conductivity, total dissolved solids and salinity.

## **RECOMMENDATIONS**

The audit teams examined the water management status of the Institution each year but for NAAC purposes the compiled report for the periods from 2018-19 to



2022-23 and the abstract of recommendations are mentioned below,

1. Gardens should be watered by using drip/sprinkler irrigation system to minimize water use.
2. Minimize wastage of water and ensure that the equipment used are regularly serviced and in good condition through AMC.
3. Ensure that all cleaning products used by college staff/hostel staff have a minimal detrimental impact on the environment, i.e. they are biodegradable and non-toxic.
4. There is a need for monitoring and controlling overflow and periodically supervision drills should be arranged by technical persons.

### **WASTE MANAGEMENT**

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable, construction, glass, dust etc. Furthermore, solid waste often includes wasted material resources that could otherwise be channeled into better service through recycling, repair, and reuse. Solid waste generation and management is a burning issue. Unscientific handlings of solid waste can create threats to everyone. The survey focused on volume, type and current management practice of solid waste generated in the campus.

#### **Liquid Waste Management**

Water conservation is a key activity as water availability affects on the development of the campus as well as on all area of development such as farming, gardening, etc. Keeping this view water conservation activity is carried out. The waste water generated is disposed off into the underground sewage tanks through waste water drainage to municipal server. The source of wastewater is Domestic Waste Water i.e., Sewage water. The Sewage water mainly comes from Toilets of college, hostel, kitchen and canteen.

#### **Solid waste management**

Waste generated from tree droppings and lawn management are major solid wastes generated in the campus/hostel. Separate dustbins are provided for Bio-

degradable and Plastic waste in order to segregate them at the source itself. Single sided used papers are reused for writing and printing in all the departments to minimize the usage of papers. Important and confidential reports/ papers are sent for pulping and recycling after completion of their preservation period. Very less plastic waste (0.12Kg/day) is generated by some departments, office, garden etc and campus is declared as Plastic Free zone. Metal waste and wooden waste is stored and sent to authorize scrap agents for further processing. Glass bottles are reused in the laboratories. In women hostel sanitary pad vending and disposal machine installed for easy waste management.

The college has separate bins to collect biodegradable and non-biodegradable waste generated in the campus. Regular meetings are conducted with ground staff regarding the cleanliness of the campus and proper disposal of waste. Various cleaning committees are there to monitor the activity both in college campus & hostels.



## E-Waste Management

E-waste generated in the campus/hostels is of minimal quantity. It is being effectively managed, keeping in mind the environmental hazards that may arise if not disposed properly.

The cartridges of laser printers are refilled outside the college campus. Awareness programme was conducted by college regarding E-waste Management. The E-wastes and defective items from computer laboratories are being stored properly and recycled in effective Manner.

The dismantled hardware of personal computers are used in PC trouble shooting lab. The dismantled electronic spare parts are immediately sold for reuse. The minimal amount of e- waste that is generated is taken by external vendor.

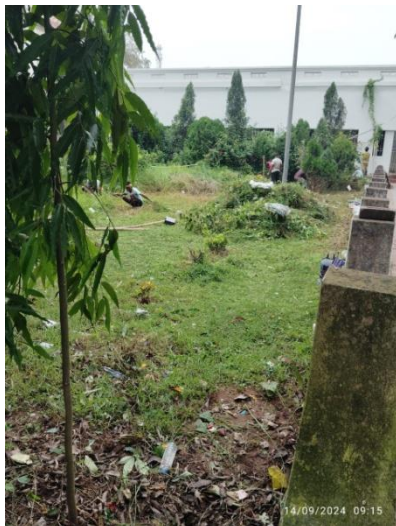


## **RECOMMENDATIONS**

1. Use reusable resources and containers and avoid unnecessary packaging wherever possible.
2. A waste water treatment plant should be installed to recycle and reuse the waste water generated from domestic use.
3. The college authority should take an initiative to purchase recycled resources when they are available.
4. A Biogas unit should be installed in the campus/hostel

## **GREEN AREA MANAGEMENT**

This includes the plants, greenery and sustainability of the campus to ensure that the buildings (college/hostel/quarters) confirm to green standards. Vertical farming is one such initiative. This also helps in ensuring that the Environmental Policy enacted, enforced and reviewed using various environmental awareness programmes.





## Observations by Audit team

Many trees are maintained in the campus (around 25 species) to maintain the biodiversity.. Various tree plantation programmes are being organized at college campus through NSS (National Service Scheme) unit and interested organization i.e forest departments, SBI, Ashok Das foundation. This program helps in encouraging eco- friendly environment which provides pure oxygen within the institute/hostels and creates awareness among campus students. The plantation program includes various types of indigenous species of ornamental and medicinal wild plant species.





## Use of Bicycles/E- Scooters

The students and non teaching staff residing in and around the campus/hostels come to college by bicycles. The college has constructed a cycle shed to safeguard their vehicles. Some students and staff members also use E Scooters.

## Roads

Roads in college are laid with provision for rainwater to seep through easily. This enables the easy recharge of ground water.

## PFC (Plastic Free Campus)

The usage of plastic in college/hostels is minimal. The staff and the students are not encouraged to use one time use plastic, plastic bags and disposable plastic things throughout the campus.

## E-Communications



The principal's office, all the Departments of the college, Examination cell, and laboratories are very well connected with a good and efficient LAN network. Hence all the inter office correspondence is done through email. This reduces the usage of papers. For more convenience whatsapp groups are created by respective office/department heads for easy E communications.

### **RECOMMENDATIONS**

1. Indoor plantation to inculcate interest in students, Bonsai can be planted in corridor to bond a relation with nature.
2. Review periodically the list of trees planted in the garden, allot numbers to the trees and keep records.
3. Establish a College Environmental Sustainable Monitoring Committee (CESMC) that will hold responsibility for the enactment, enforcement and review of the Environmental Policy.
4. Environmental Committee shall be the source of advice and guidance to staff and students on how to implement this Policy.
5. Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings.
6. The students should be motivated to follow ISR (Institutional Social Responsibility) strictly for establishment of a Green campus.

### **ENVIRONMENTAL MONITORING**

As part of green audit of campus, the Green Audit Assessment Team has carried out the environmental monitoring of campus. This includes Illumination, Noise level, ventilation and indoor air quality of the class rooms. It was observed that illumination and ventilation is adequate considering natural light and air velocity present. Noise level in the campus is well below the limit. The team also reviewed about various awareness programmes carried out in the campus so as to motivate the students and the civil society near by the campus.

### **Observations**

1. The students and staff of Botany department are very much engaged in the awareness programme through organization of student rally in and around the campus to motivate and transmit a message of "Protect Environment".
2. They have organized "World earth Day" in collaboration with International agencies i.e. UNEP, CSAYN, University of Oxford Stockholm +50 campaign.
3. The Department of Botany of the Institution is included in "Nature Positive Universities" programme by University of Oxford and UNEP.



## **CONCLUSION**

Though the institution is a Government Autonomous college, there is significant environmental research both by faculty and students. The environmental awareness initiatives taken by the staff members and students are substantial. The organization of seminars, conferences, awareness programmes, ISR activities are remarkable and proves that the campus is going green. The garden maintained by the College is highly appreciable. Few recommendations are added for waste management and waste reduction using alternate eco-friendly and scientific techniques. This may lead to the prosperous future in context of Green Campus and thus aid in a sustainable environment and community development.

## **ACKNOWLEDGEMENT**

We are grateful to the management and committee members of Narasingh Choudhury Autonomous College to award this prestigious project on green auditing. Further we sincerely thank the college staff for providing us the necessary facilities and co-operation during the audit. This ample co-operation helped us a lot in making this audit possible and successful.



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