

GREEN AUDIT REPORT

2018-2023



Internal Quality Assurance Cell

RAMA DEVI WOMEN'S UNIVERSITY

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GREEN AUDIT COMMITTEE MEMBERS

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PREFACE

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of various establishments. It aims to analyse environmental practices within and outside of the concerned sites, which will have an impact on the eco-friendly ambiance.

A green audit can be a useful tool for an institution to determine how and where they are using the most energy or water or resources; the institution 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 a waste minimization plan. It can create health consciousness and promote environmental awareness, values, and ethics. It provides staff and students better understanding of the green impact on campus. If a self-inquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-inquiry 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 carbon-di-oxide 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 the Corporate Social Responsibility of Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

In recent times, the Green Audit of an institution has been becoming paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. Many institutions undertake a lot of good measures to resolve these problems but these are not documented due to lack of green documentation awareness. All these non-scholastic efforts of the administrations play an important role in ensuring the green quotient of the campus is intact.

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.






Dr. Suryamani Patro

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CERTIFICATE

The following committee has been involved in planning, mentoring, surveying, analysing, report preparing and recommending the necessary changes related to the Green Audit of Rama Devi Women's University Campus (2018-23).

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GREEN AUDIT REPORT

Introduction

Rama Devi Women's University is named after Maa Rama Devi as a humble tribute to the values and sacrifices she stood for. It is the first Women's University of Orissa, which was born on 30.05.2015 as an affiliating University. 48 Women's Colleges under Utkal University came under the jurisdiction of this new University. The Chief Minister of Odisha officially inaugurated the University in a ceremony held on 3rd December 2015 coinciding with the birthday of Maa Rama Devi after whom the University is named and the university celebrates this day of 3rd December as its Foundation Day. It has been established by an Act No.5 of 1989 of the State Legislature of Odisha as a State University vide Notification No.-HE-FE-I-B-MISC-9/2015 and is empowered to award degrees as specified by the UGC under Section 22 of the UGC act 1956 through its departments, its constituent Colleges and/or through its affiliated Colleges in regular mode with the approval of concerned statutory bodies/councils, wherever required.

Higher Secondary, Undergraduate, Postgraduate and Doctoral programmes run on the campus. The stakeholders of the University comprise of 4045 current enrolled students 2023-2024, 142 faculty members (permanent and temporary), around 161 administrative and supporting staff.

University offers Undergraduate Programmes courses in 24 subjects and Postgraduate Programmes courses in 19 subjects and Doctoral Programmes in 13 subjects. Elective courses are also offered in music and NCC. University offers Value added courses in several subjects.

Other Attractions of the University:

Well-equipped digital library, Hostel for specially-abled girl students, Hostel for tribal students, Health and Wellness Center, Wellness Corridor, Wellness and Counseling Center, NSS, NCC, Rovers and Rangers, YRC, Sports Council, Career Counseling Cell, E-learning centre, Community Connect Cell, Center of Excellence, Sarla Devi Center, Language lab. etc.

Environmental Settings

The University is spread over 23.626 acres which include about 22 to 30 percent green area. The University is easily accessible by road, rail and air connectivity. Biju Pattanaik Airport is about 7 km away from the University. The University is situated in the heart of the state capital, adding to its geographical advantage. It attracts students from across the state and country. Although the campus is located in a residential area, the presence of a green belt including gardens, lawns

and herbal garden has considerably reduced noise pollution on the campus. The university building area has 03 academic buildings, an administrative building, a library building, two auditorium hall and 06 hostels.

1.1 Need for Green Audit

Green auditing is the process of identifying and determining whether institutions' practices are eco-friendly and sustainable. Traditionally, we are efficient users of natural resources. But over the period excess use of resources like energy, and water, have become habitual for everyone especially, in common areas. Now, it is necessary to check whether our processes are consuming more than the required resources. Whether we are handling resources carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion, it is necessary to verify the processes and convert them into green and clean one. The green audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.

1.2 Goal of Green Audit

The goals of the green audit are as follows:

- Identification and documentation of green practices followed by the university.
- Analyze and suggest solutions for problems identified.
- Assess facility of different types of waste management.
- Increase environmental awareness throughout the campus.
- Identify and assess environmental risk.
- To create awareness about bio-diversity and sustainability among the stakeholders of the university.
- The long-term goal of the environmental audit program is to collect baseline data on environmental parameters and resolve environmental issues before they become problems.

1.3 Objectives and Scope of Green Audit

The green audit aims to analyze environmental practices within and outside the university campuses, which will have an impact on the eco-friendly atmosphere. A green audit can be defined as the systematic identification, quantification, recording, reporting and analysis of components of the university environment. It was initiated with the motive of inspecting the effort

within the institutions whose exercises can cause threats to the health of inhabitants and the environment.

The objectives of the green audit are as follows:

- To examine the current practices such as resource utilization, waste management, air-quality monitoring etc.
- To identify and analyze significant environmental issues.
- Setup needs and goals for green practices on the campus.
- Establish and implement environmental conservation approaches across the university campus.
- Continuous assessment for betterment in performance in green

1.4 Benefits of Green Audit

There are many advantages of green audit to an Educational Institute:

- It would help to conserve the bio-diversity in and around the campus.
- Recognize the cost-saving methods through waste minimization and energy conservation measures.
- Empower the organization to frame a better environmental performance.
- The green audit report can work as a document of reference to provide an understanding to adapt better green behaviours.

1.5 Environmental Policies of the University

Rama Devi Women's University is fully committed to adhere to the principles of protection of environment and Sustainability. The University also ensures that its functions and routine acts does affect environment positively. Since its inception the University has shown its commitment and liability towards the protection of the environment at the level best and that is why the campus is Green and clean with beautiful landscapes and variety of trees. The main responsibility for implementation of this policy lies with the University Council and the Vice-Chancellor as the University's Chief Executive. The Heads of Colleges and the Directors of the Corporate Services are responsible for ensuring compliance with University Environment Policy within their area of control. The University will actively monitor the performance of the stakeholders in the implementation of the aims and objectives of this Policy in the activities under their control.

Whilst the University accepts the main responsibility for implementation of this policy, individuals have a very important role in co-operating with those responsible for safeguarding the environment. Individuals are required to abide by rules and requirements made under the authority of this policy.

For effective implementation of environmental policy of Rama Devi Women's University has formulated clear lines of responsibility at administrative level. Environment protection board is responsible for the management of waste and protection of environment throughout the university. Its functions are:

- To formulate environmental policy for university.
- Ban on cutting of trees, exceptions allowed only after approval of board in writing.
- Effective implementation of environmental policy by means of audit and monitoring.
- Initiation of appropriate awareness in case of non - adherence to environmental norms
- Continuous review of effectiveness of existing environmental policies.
- The policy shall be reviewed after every five years or earlier, as need arises.

REPORT OF THE YEAR 2018-19

Biodiversity of Rama Devi Women's University

- **Categorization of Plants on the University Campus**

As per the findings of the internal green audit conducted, large trees include Peepal (*Ficus religiosa*), Goolar (*Ficus racemose*), Pilkhan (*Ficus virens*), Ashok (*Saraca asoca*), Jamun (*Syzygium cumini*), Mango (*Mangifera indica*), Kadamb (*Neolamarcki acadamba*), Bael (*Aegle marmelos*), Gulmohar (*Delonix regia*), Champa (*Magnolia champaca*), Kanak Champa (*Pterospermum acerifolium*), Semal (*Bombax ceiba*) and Neem (*Azadirachta indica*) etc. were identified and confirmed during virtual tour.

College has indoor plants in the building. Indoor plants have an aesthetic appearance as well as health benefits. A list of few indoor plants which can be potted are presented in Annexure.

- **Landscaping:** Landscaping is the process of making a garden or other piece of land more attractive by altering the existing design, adding ornamental features, and planting trees and shrubs. Ornamental shrubs, designer pathway, lawn flower plants and bushes cut in different shapes of animals are the part of landscaping procedure.

Types of waste and Waste Management Approaches

- **Location wise categorization of waste in campus**

Waste management or waste disposal includes the processes and actions required to manage waste from its inception to its final disposal. This includes the collection, transport, treatment and disposal of waste. Waste can be solid; liquid or E-Waste and each type has different methods of disposal and management. Waste management deals with all types of waste, including industrial, biological, household, municipal, organic, biomedical, radioactive wastes. In some cases, waste can pose a threat to human health. Waste management is intended to reduce adverse effects of waste on human health, the environment, planetary resources and aesthetics.

The green audit covers waste management in three aspects. The first is solid waste which includes broken furniture, plastic, etc. The second waste is liquid waste which includes wastewater or type of chemicals etc. The third waste includes e-waste, which consists of tube lights, L.E.D. bulbs, computer parts etc.

A survey conducted to collect data of solid, liquid, and e-waste management at Rama Devi Women's University revealed the following:

Paper, Broken glass equipment, Broken furniture, Plants used in laboratory classes, food waste, kitchen waste, papers, polythene, and plastics are a few wastes accumulated in the departments.

The source of wastewater is Domestic Waste Water i.e., Sewage water. The Sewage water mainly comes from the Toilets of college, hostel, kitchen.

Not adequate measures are taken by departments for disposal of the wastes.

From the above it can be concluded that

- 1) All departments generate paper waste. Especially, academic building is using more than one paper for printing and writing is good practices.
- 2) Food waste generated in campus is mostly collected from dining areas and its proper management is necessary.
3. E-waste is also generated. To manage proper planning is necessary.

Rainwater Harvesting

Water is one of the vital components of life. The rapid pace of irrigation growth, urbanization and industrialization has put enormous stress on water resources. The cumulative impact of the increase in the use of this natural resource has led to water scarcity in many regions of the country. Nevertheless, climate change has also resulted in a change in hydrological cycle in the country. Hence, this scarce resource must be protected by effective and efficient management on sound scientific methodology for its sustainable development.

The meeting of Green Audit was convened and the following recommendations were suggested:

Recommendations:

Recommendations regarding the beautification of the university:

- Registrar office may be requested to create landscaping in the University premises.
- Registrar office may be requested to formulate a committee specifically to initiate plantation drive around the campus

Recommendations regarding waste management:

- Registrar office may be requested to issue Notice/Letter to all concerned departments/sections/centres/hostels/library to declare and certify all the inventory of obsolete and unserviceable items/equipments/E-waste (s) in a prescribed format (annexure-I).
- Registrar office may be requested to collaborate with State Pollution control Board and BMC for effective management of waste of the university.
- Awareness programme on solid waste.
- Awareness hoarding/banner in every department buildings/ section/hostel mentioning 'Don't mix plastic waste with kitchen waste' should be present.
- Installation of different colours of dustbins in the campus for collection of different types of solid waste

Recommendations regarding rainwater harvesting:

- Installation of Roof top Rain water harvesting structure
- Organization of awareness activities for water conservation and management
- Regular cleaning of water bodies
- Regular sewage collection, transmission treatment, recycle and reuse
- Setting of water treatment plant

Recommendations regarding green initiatives:

- DSW may be requested to organize activities and programs to create awareness regarding e-waste and solid waste management.

Actions taken report according to the recommendations

- Landscaping of the University has been undertaken.
- Segregated dustbins have been installed throughout campus.
- Plantation programme in World Environment Day and Swachhata hi sewa campaign were conducted.
- Regular cleanliness drive has been started and monitored to keep the University environment clean.
- Awareness programme on waste segregation and its benefit among the stakeholders has been conducted by different department of the University for keeping campus holistically clean and healthier to live.

Conclusion

Green Audit is one of the important tools to check the balance of natural resources and its judicious use. Green auditing is the process of identifying and determining whether institutional practices are eco-friendly and sustainable. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area.

Rama Devi Women's University has conducted a "Green Audit" in the academic year 2019-2020. The main objective to carry out green audit is to check the green practices followed by RDWU and to conduct a well-defined audit report to understand whether the RDWU is on track of sustainable development.

From the green audit following are the conclusions, which can be taken for improvement in the campus. 1) All departments generate paper waste. Especially, in the academic building using more than one paper for printing and writing is good practice. 2) Food waste generated in the campus is mostly collected from dining areas. The food waste is diverted to a nearby farm.


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REPORT OF THE YEAR 2019-20

Biodiversity of Rama Devi Women's University

- **Categorization of Plants on the University Campus**

As per the findings of the green audit conducted, large tree like Peepal (*Ficus religiosa*), Goolar (*Ficus racemose*), Pilkhan (*Ficus virens*), Ashok (*Saraca asoca*), Jamun (*Syzygium cumini*), Mango (*Mangifera indica*), Kadamb (*Neolamarcki acadamba*), Bael (*Aegle marmelos*), Gulmohar (*Delonix regia*), Champa (*Magnolia champaca*), Kanak Champa (*Pterospermum acerifolium*), Semal (*Bombax ceiba*) and Neem (*Azadirachta indica*) etc. were identified and confirmed during virtual tour. The university has indoor plants in the building. Indoor plants have an aesthetic appearance as well as health benefits. A list of few indoor plants which can be potted are presented in Annexure.

- **Landscaping:** The University is working towards beautification of the campus by planting trees and shrubs, ornamental plants, creation of lawn, installation of lamp. Decorating shrubs and trees with coloured pebbles and bricks, etc.

Types of waste and Waste Management Approaches

- **Location wise categorization of waste management on campus**

Waste management is an important element of environmental protection. Its purpose is to provide hygienic, efficient, and economical solid waste storage, collection, transportation, and treatment or disposal of waste without polluting the atmosphere, soil, or water system.

A survey conducted to collect data on solid, liquid, and e-waste management at Rama Devi Women's University revealed the following:

- Paper, Broken glass equipment, Broken furniture, Plants used in laboratory classes, food waste, kitchen waste, papers, polythene, and plastics are a few wastes accumulated in the departments.
- The source of wastewater is Domestic Wastewater i.e., Sewage water. The Sewage water mainly comes from the Toilets of the college, hostel, and kitchen.
- Not adequate measures are taken by departments for the disposal of the wastes.

Solid, Liquid, and E-waste

The green Audit team suggested procedures and a few recommendations for the disposal of these wastes.

- **Solid Waste Management**

The solid waste generated from campus includes mainly paper waste, wet (food/ organic) waste, and E-waste. In areas like classrooms, mostly paper waste and plastic wrappers are generated. Biodegradable wet waste is mostly generated from the canteen and hostel kitchen.

Being an academic institution, wastepaper is one of the main solid wastes generated on the premises. Waste bins provided in every staff room, laboratory, washroom, kitchen, and in the campus, area serve the purpose of cleaning. The university has taken steps to minimize and avoid paper usage. Prints and photocopies are taken on both sides of the paper to avoid excess paper usage. Rather than a photocopy, digitalization (scanning) is practiced.

- **Liquid waste management procedures**

The measures for Liquid Waste Management are:

1. Modern sewage treatment plant where it involves four processes:

- Collection and Pumping
- Preliminary Treatment
- Primary Treatment
- Secondary Treatment

2. Wastewater Treatment

It involves following process:

- Physical and chemical treatment techniques for removal of contaminants like oils, dissolved solids and metals.
- Biological water treatment
- Liquid Direct Injection technology helps to destroy a wide range of waste streams.
- Clean oil products are collected and reused or sold.

- Organic waste streams are turned into renewable energy with the help of organizations that have anaerobic digester facilities.

- **E-waste management**

E- waste is broadly comprised of discarded computer monitors, motherboards, mobile phones and chargers, compact discs, headphones, Printed Circuit Boards (PCB), televisions etc.

E-waste management procedures:

- Purchasing one device with multiple functions.
- Keeping the device clean, and avoiding overcharging the battery extended the life of electronics.
- Buying environmentally friendly electronics.
- Reusing large electronics.
- Recycling electronics and batteries in e-waste recycling bins located around campus

Air Quality Monitoring

Indoor Air Quality (IAQ) refers to the air quality within & around buildings and structures, it relates to the health and comfort of building occupants.

Common indoor pollutants are listed as below:

- Carbon monoxide – Sources of carbon monoxide are incomplete combustion of fossil fuels
- Volatile organic compounds (VOCs) – VOCs are emitted by paints and lacquers, paint strippers, pesticides, office equipment such as copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions etc. RO system Water purifier 9 Confidential Document
- Carbon dioxide – Due to human respiration
- Particulate matter – Due to construction and maintenance activities, vehicular pollution
- Nitrogen Oxides- Due to vehicular pollution

Measures taken by the University are as follows:

a) Science laboratories and the kitchen in the canteen use liquefied petroleum gas (LPG), a clean fuel.

b) In classrooms, the mode of ventilation is natural draft (through windows) and is enhanced by fans. Large windows and cross-ventilation are observed in corridors. Air conditioners are used in some offices and computer laboratories. ACs are serviced regularly to ensure indoor air quality.

c) Science laboratories are provided with exhaust fans so that the fumes are safely discharged outside the building.

d) Green belts have been set up in the campus area.

Rainwater Harvesting

Water is one of the vital components of life. The rapid pace of irrigation growth, urbanization and industrialization has put enormous stress on water resources. The cumulative impact of the increase in the use of this natural resource has led to water scarcity in many regions of the country. Nevertheless, climate change has also resulted in a change in the hydrological cycle in the country. Hence, this scarce resource must be is protected by effective and efficient management on sound scientific methodology for its sustainable development.

Replacement of all old water faucets with water-saving faucets such as prismatic taps, aerator taps, jet sprays etc. can save water and help minimize water footprint.

The meeting of Green Audit members was held and the following recommendations were made:

Recommendations:

Recommendations regarding beautification of the university:

- Registrar's office requested for installation of dustbins throughout the campus
- Registrar's office may be requested building committee to Lane markings on the roads inside university premises

Recommendations regarding waste management:

- Registrar office may be requested to initiate the process of purchasing and installation of 120-liter wheel dustbins of blue (for paper waste), green (for glass waste), plastic colour (for plastic waste) and red (for metal waste) to be installed near Admin. building, CPGC office, academic blocks 1, 2, 3, hostels, library and fully mechanized organic waste machine for compost reprocessing.
- The Registrar's office may be requested to collaborate with the State Pollution control Board and BMC for effective management of waste at the university.

Recommendations regarding green initiatives:

- DSW may be requested to organize activities and programs to create awareness regarding e-waste and solid waste management.

Actions taken report according to the recommendations

- Segregated dustbins have been installed throughout campus.
- Lane markings on the roads inside the university premises have been completed
- Solar panel road lights have been installed around the walking lane in the premises of the University
- Regular cleanliness drive has been started and monitored to keep the University environment clean
- Awareness programme on waste segregation and its benefit among the stakeholders has been conducted by different department of the University for keeping campus holistically clean and healthier to live

Conclusion

Green Audit is one of the important tools to check the balance of natural resources and its judicial use. Green auditing is the process of identifying and determining whether institutional practices are eco-friendly and sustainable. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area.

Rama Devi Women's University has conducted a "Green Audit" in the academic year 2019-2020. The main objective to carry out green audit is to check the green practices followed by RDWU and to conduct a well-defined audit report to understand whether the RDWU is on track of sustainable development.

From the green audit following are the conclusions, which can be taken for improvement in the campus. 1) All departments generate paper waste, especially, in the academic building using more than one paper for printing and writing. 2) Food waste generated in the campus is mostly collected from dining areas. The food waste is diverted to a nearby farm.


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REPORT OF THE YEAR 2020-21

Biodiversity of Rama Devi Women's University

- **Categorization of Plants in the University Campus**

As per the findings of the internal green audit conducted, large trees include Pilkhan (*Ficus virens*), Peepal (*Ficus religiosa*), Kadamb (*Neolamarckia cadamba*), Goolar (*Ficus racemose*), Ashok (*Saraca asoca*), Jamun (*Syzygium cumini*), Mango (*Mangifera indica*), Bael (*Aegle marmelos*), Gulmohar (*Delonix regia*), Champa (*Magnolia champaca*), Neem (*Azadirachta indica*) and Semal (*Bombax ceiba*), etc. were identified and confirmed during virtual tour.

Fruit-bearing trees attract a wide range of insects, including wasps, bees, ants, and beetles, which boosts biodiversity. The building has indoor plants. Indoor plants have both aesthetic and health benefits.

- **Landscaping:** Landscaping is defined as any activity that modifies the visible features of a piece of land, such as the following: Flora and fauna are examples of living elements, as is gardening, the art and craft of growing plants to create beauty in the landscape.

Types of waste and Waste Management Approaches

Waste management is addressed in three ways by the green audit. The first category is solid waste, which includes items such as broken furniture, plastic, and other materials. Liquid waste, which includes wastewater and various chemicals, is the second type of waste. E-waste is the third type of waste, and it includes tube lights, L.E.D. bulbs, computer parts, and so on. Rama Devi Women's University's solid, liquid, and e-waste management findings revealed the following:

- Paper, broken glass equipment, broken furniture, plants used in laboratory classes, food waste, kitchen waste, papers, polythene, and plastics are just some of the wastes that have accumulated in the departments.
- The source of wastewater is domestic wastewater, also known as sewage. Sewage water is primarily derived from college, hostel, and kitchen toilets.
- Departments are not taking adequate waste disposal measures.

Air Quality Monitoring

Oxygen yielding green plants are present throughout the campus to maintain a healthy environment in the campus. Specific measures adopted for air pollution control on the university campus.

Rainwater Harvesting

Water scarcity has resulted in many parts of the country as a result of the increased use of this natural resource. Nonetheless, climate change has caused a shift in the hydrological cycle of the country. As a result, effective and efficient management based on sound scientific methodology is required to protect and ensure the long-term development of this scarce resource.

Organizing Water conservation and management awareness activities, regular sewage collection, transmission treatment, recycling, and reuse, and construction of a water treatment plant are some strategies

The meeting of Green Audit members was held and the following recommendations were made:

Recommendations

- Spreading awareness and proper disposal of masks with regular sanitization inside the working places.
- Raising awareness among all university members (students, staff, and laborers), and
- Increasing green space on campus.

Actions taken report according to the recommendations:


- The Registrar's office recommended to all the stakeholders of the University to spread awareness and proper disposal of masks with regular sanitization inside the working places.
- The university campus was sanitized regularly during COVID-19 pandemic. The hostels and entire university campus was taken care of regular cleaning and sanitization
- The green space of the university has been increased by planting more trees around the campus.

Conclusion

The report emphasizes the university's sanitization, air quality monitoring and greenery heavily. The report goes over the university's biodiversity, including plant classification on the Rama Devi University campus. Furthermore, the team members are concerned with waste management, and some recommendations are made. The team members made some suggestions to help control the air quality at the university. For the years 2020-21, rainwater harvesting techniques and awareness programs are also mentioned. Finally, the members of the team devised some slogans to promote greenery and save the environment.

This study contains several recommendations that could assist the university in implementing effective environmental practices. The university's landscaping, biodiversity, rainwater harvesting, and air quality monitoring are also given top priority. The audit team found that the facility is generally properly cared for in terms of environmental stewardship. There are no significant findings, but a few things need to get started right away, including waste management records by a monthly inventory of hazardous waste, recharge of rainwater harvesting systems, water balance cycles, and periodic inspections of building housekeeping and environmental policy.


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REPORT OF THE YEAR 2021-22

Biodiversity of Rama Devi Women's University

- **Categorization of Plants in the University Campus:**

According to the results of the internal green audit, during the virtual tour, large trees such as Peepal (*Ficus religiosa*), Goolar (*Ficus racemose*), Pilkhan (*Ficus virens*), Ashok (*Saraca asoca*), Jamun (*Syzygium cumini*), Mango (*Mangifera indica*), Kadamb (*Neolamarckia cadamba*), Bael (*Aegle marmelos*), Gulmohar (*Delonix regia*), Champa (*Magnolia champaca*), Semal (*Bombax ceiba*) and Neem (*Azadirachta indica*) etc. were identified and confirmed.

Trees that provide fruit draw a wide range of insects, including wasps, bees, ants, and beetles, which boosts biodiversity. The college contains indoor vegetation. Not only can indoor plants look good, but they also have health benefits.

- **Landscaping**

Landscaping is defined as a process that modifies the observable characteristics of an area, such as the following: Flora and fauna are examples of living elements, as is gardening and the art and craft of cultivating plants that enhance magnificence in the natural environment.

Types of waste and Waste Management Approaches

- **Location wise categorization of waste in the campus**

Waste management is addressed in three ways by the green audit. The first category is solid waste, which includes items such as broken furniture, plastic, and other materials. Liquid waste, which includes wastewater and various chemicals, is the second type of waste. E-waste is the third type of waste, and it includes tube lights, L.E.D. bulbs, computer parts, and so on. Rama Devi Women's University's solid, liquid, and e-waste management findings revealed the following:

- Some of the wastes that have accumulated in the departments include paper, broken glass equipment, broken furniture, plants used in laboratory classes, food waste, kitchen waste, papers, polythene, and plastics.
- Domestic wastewater, also known as sewage, is the source of wastewater, which is primarily derived from hostel, kitchen, and toilets.

Air Quality Monitoring

The campus is surrounded by oxygen yielding green plants to maintain a healthy environment in the campus. Specific measures adopted for air pollution control on the university campus.

Rainwater Harvesting

Water scarcity has resulted from increased use of this natural resource in many parts of the country. Nonetheless, the changing climate has shifted the hydrological cycle of the country. As a consequence, in order to protect this scarce resource and ensure its long-term development and efficient management based on sound scientific methodology is required.

The meeting of Green Audit members was held and the following recommendations were made:

Recommendations:

Recommendations regarding the beautification of the university

- Plantation of flowered plants and decorative potted plants throughout campus may be requested from the Registrar's Office.
- It is suggested that solar panels be installed around the University's campus.

Recommendations regarding waste management

For effective waste management at the university, the registrar's office may be asked to collaborate with the State Pollution Control Board and the BMC.

Recommendations regarding rainwater harvesting

- Installation of Roof top Rain water harvesting structure
- Organization of awareness activities for water conservation and management
- Regular cleaning of water bodies
- Regular sewage collection, transmission treatment, recycle and reuse
- Setting of water treatment plant

Recommendations regarding green initiative

- DSW may be requested to organize activities and programs to create awareness regarding e-waste and solid waste management.

Recommendations regarding Air Quality Monitoring

The following actions can be considered in order to reduce air pollution on university campus:

- Smoking-free campus by banning smoking inside the campus
- Reducing air pollution emission sources from university laboratories
- Controlling traffic flow
- Raising awareness among all university members (students, staff and labourers)
- Increasing green space on campus is thought to be a good pollutant trap.

Actions taken report according to the recommendations

- Landscaping development and maintenance around the campus have been undertaken with turf grass, decorative potted flowers, foliages, seedlings with an estimated approval budget of Rs. 93,35,760/- (office order no. COF/2441, dated 19.05.2022) and for maintaining greenery in the campus.
- Segregated dustbins have been installed throughout campus.
- Lane markings on the roads inside university premises have been completed
- Solar panel road lights have been installed around the walking lane in premises of the University
- Placement of sculptures near library and auditorium as well as Art gallery created in Academic building 1
- Painted cemented bricks (yellow and black) for bordering university roads
- Two newly entry gates have been constructed, first at the university entry and second, near the Academic Block 2
- Regular cleanliness drive has been started and monitored to keep the University environment clean
- Awareness programme on waste segregation and its benefit among the stakeholders has been conducted by different department of the University for keeping campus holistically clean and healthier to live
- Obsolete disposal and auction committee letter No. 3996, dated 23/08/2022 has been initiated for the unserviceable items/equipments/E-waste (s) from the campus.

Conclusion

The report places a strong emphasis on the university's greenery. The green audit team discusses the need, goals, objectives, and benefits of the green audit. The report discusses the university's biodiversity, which includes the classification of plants on the Rama Devi University campus. Furthermore, the team members are focused on waste management, and some suggestions are provided. In brief, the team members shed light on the university's

landscaping. This report also discusses air quality monitoring. The team members make some suggestions that would aid in controlling the university's air quality. Furthermore, rainwater harvesting techniques and public awareness campaigns will be implemented between 2021 and 2022. Rainwater harvesting techniques and awareness programmes are also mentioned for the years 2021-22. Finally, the team members came up with some slogans to promote greenery and save the environment.

This report constitutes various suggestions throughout which would help in implementing good environmental methods in the university. The major focus is also given to the landscaping, biodiversity, rainwater harvesting, and air quality monitoring of the university.

According to the audit team, the overall site is maintained well in terms of environmental stewardship. There are no major observations, but there are a few things that need to be started right away: waste management records by a monthly inventory of hazardous waste, rainwater harvesting recharge; water balance cycle, and periodic inspection of building housekeeping and environment policy.


Director IQAC
Rama Devi Women's University
Bhubaneswar


Registrar
RD Women's University
Bhubaneswar


Vice Chancellor

REPORT OF THE YEAR 2022-23

Biodiversity of Rama Devi Women's University

- **Categorization of Plants on the University Campus**

According to the findings of the internal green audit, large trees such as Peepal (*Ficus religiosa*), Goolar (*Ficus racemose*), Pilkhan (*Ficus virens*), Ashok (*Saraca asoca*), Jamun (*Syzygium cumini*), Mango (*Mangifera indica*), Kadamb (*Neolamarckia cadamba*), Bael (*Aegle marmelos*), Gulmohar (*Delonix regia*) were identified.

Fruit-bearing trees attract a variety of insects such as wasps, bees, ants, and beetles, increasing biodiversity. The college has indoor plants. Indoor plants have both aesthetic and health benefits. Annexure contains a list of a few potted indoor plants.

Gardeners monitor the gardens. Plants are treated with organic fertilizers and pesticides if necessary

- **Landscaping**

Landscaping is the addition of plants, the manipulation of terrain, and the building of structures. Landscaping is any activity that alters the visible features of a piece of land, such as the following: Living elements, such as flora and fauna; or gardening, the art and craft of growing plants with the goal of creating beauty in the landscape.

Types of waste and Waste Management Approaches

- **Location wise categorization of waste management in campus**

Nature is extremely important in our lives. According to the Press Information Bureau (2021), India's total forest and green cover accounts for 24.62 percent of its geographical area. We have historically been excellent and efficient users of natural resources. However, overuse of resources such as energy and water has become habitual for everyone, particularly in public places. As a result, it is necessary to check whether our processes consume more resources than are required. Green auditing regulates all such practices and provides an efficient method of utilizing natural resources.

The green audit addresses waste management in three ways. The first is solid waste, which includes broken furniture, plastic, and other materials. The second type of waste is liquid waste, which includes wastewater and various chemicals. Findings of solid, liquid, and e-waste management at Rama Devi Women's University revealed the following:

- Paper, Broken glass equipment, Broken furniture, Plants used in laboratory classes, food waste, kitchen waste, papers, polythene, and plastics are a few wastes accumulated in the departments.
- The source of wastewater is Domestic Waste Water i.e., Sewage water. The Sewage water mainly comes from the Toilets of college, hostel kitchen.
- Not adequate measures are taken by departments for disposal of the wastes.

Solid, Liquid and E-waste

Solid waste management procedures:

Awareness programme on solid waste. To know ways of collection, treatment, and disposing of solid material that is discarded. Improper disposal of municipal solid waste can create unsanitary conditions, and these conditions in turn can lead to pollution of the environment and to outbreaks of vector-borne disease.

There should be an awareness hoarding/banner in every department building/section/hostel stating "Don't mix plastic waste with kitchen waste."

Installation of various coloured dustbins on campus for the collection of various types of solid waste

Solid waste sanitary landfills: The process is widely used because it is simple, clean, and efficient. Layers are compressed with mechanical equipment and covered with earth, levelled, and compacted in this procedure. A 3 to 5 m deep trench is excavated, and microorganisms act on and degrade organic matter. The refuse depth is generally limited to 2m in this procedure. Bacterial facultative hydrolysis converts complex organic matter into simpler water-soluble organics.

Incineration method: This method is appropriate for combustible waste. This procedure has high operating and construction costs. It can be used to reduce the amount of solid waste destined for landfill. MOUs could be signed with the BMC in Bhubaneswar.

Composting is a popular process that is similar to sanitary land filling. This procedure separates and composts decomposable organic matter. Yields are stable end products that also serve as good soil conditioners. They can be used as a starting point for fertilizers.

Salvaging procedure: Materials such as metal, paper, glass, rags, certain types of plastic and so on can be salvaged, recycled, and reused.

Fermentation/biological digestion: Biodegradable wastes are converted to compost and recycling can be done whenever possible. Hazardous wastes can be disposed of using suitable methods.

Functioning of the above-cited methods used for solid waste management can be initiated in collaboration with different govt. bodies such as state pollution control board or BMC.

Liquid waste management procedures

The measures for Liquid Waste Management are:

1. Modern sewage treatment plant where it involves four process:

- Collection and Pumping
- Preliminary Treatment
- Primary Treatment
- Secondary Treatment

2. Wastewater Treatment

It involves following process:

- Physical and chemical treatment techniques for removal of contaminants like oils, dissolved solids and metals.
- Biological water treatment
- Liquid Direct Injection technology helps to destroy a wide range of waste streams.
- Clean oil products are collected and reused or sold.
- Organic waste streams are turned into renewable energy with the help of organizations that have anaerobic digester facilities.

E-waste management procedures:

- More awareness programmes for all the stakeholders of the University on e-waste. To know exactly what gets put into your electronics. The raw materials being used to manufacture your laptops/computers/cell phones help to understand how harmful those materials and toxins can be if they are tossed into a landfill. Importantly, proper disposal won't be harmful to the environment.

- Instructions from administration to reuse as often as possible. If parts and equipment are still working, try repairing the electronic device before getting a new one. And if the device is beyond the point of being repaired, then recycle it.
- Buying or Purchasing instructions: Only for an environmentally friendly label. For example- labelled Energy Star, or have been certified by the Electronic Product Environmental Assessment Tool.
- Purchasing consideration in limiting the number of electronics we own. If we don't need an extra gadget, look for devices that have multiple functions.
- Seminar/Webinar/Teaching students about e-waste. It helps if we can instil within them at a young age a commitment to e-waste recycling. 'Recycle, recycle, recycle.'
- Notice/Letter to be given to all concerned departments/sections from Registrar's office for segregating and declaring e-waste in the format (Annexure-I/Google form).
- In continuation for proper disposal/recycling of the segregated waste a University level letter/communication from the University office needs to be sent to the State pollution control board or BMC for effective measures as per the Govt. issued guidelines.
- Department/ Centre/section-wise team on e-waste management to be created for effective management.
- Instead of selling to local vendors, the government approved recycling and dismantling centres need to be encouraged. This can be settled by generating a price list for e-waste and its components.

Air Quality Monitoring

State Pollution Control Board monitors the ambient air quality of the campus to check the presence of particulates and dust particles in the air. Plantation of oxygen yielding plants also helps in purification.

Rainwater Harvesting

Water is one of the vital components of life. The rapid pace of irrigation growth, urbanization and industrialization has put enormous stress on water resources. The cumulative impact of the increase in the use of this natural resource has led to water scarcity in many regions of the country. Nevertheless, climate change has also resulted in a change in hydrological cycle in the country. Hence, it is necessary that this scarce resource is protected by effective and efficient management on sound scientific methodology for its sustainable development.

Environmental audits are actually compliance audits; internal reviews of operations to meet environmental requirements. Waste reduction audits are systematic, periodic internal reviews of processes and operations designed to identify and provide information about opportunities to reduce wastes.

The meeting of Green Audit was convened and following recommendations were suggested by the members.

Recommendations:

Recommendations regarding beautification of the university:

Registrar office may be requested to constitute an 'Eco Club' and a Garden Committee to offer wide spectrum of environmental and nature activities and platforms to enhance awareness and exhibit the relationship with nature.

Registrar office may be requested to formulate a beautification committee with the following members: civil engineer, electrical engineer, PWD, PHD, Botany, Life science, campus supervisor.

Recommendations regarding waste management:

- Registrar office may be requested to issue Notice/Letter to all concerned departments/sections/centres/hostels/library to declare and certify all the inventory of obsolete and unserviceable items/equipments/E-waste (s) in a prescribed format (attached in annexure).
- Registrar office may be requested to contact the nearest Govt. ITI for proper disposal of the wastes.
- Registrar office may be requested to initiate the process of purchase and installation of 120 litre wheel dustbins of blue (for paper waste), green (for glass waste), plastic colour (for plastic waste) and red (for metal waste) to be installed near Admin building, CPGC office, academic blocks 1, 2, 3, hostels, library and fully mechanized organic waste machine for compost reprocessing.
- Registrar office may be requested to collaborate with State Pollution control Board and BMC for effective management of waste of the university.
- Taken Green Initiatives:
- DSW may be requested to organize activities and programs to create awareness regarding e-waste and solid waste management.

Action taken report according to the recommendations:

- Landscaping development and maintenance around the campus have been undertaken with turf grass, decorative potted flowers, foliage, seedlings with an estimated approval budget of Rs. 93,35,760/- (office order no. COF/2441, dated 19.05.2022) and for maintaining greenery in the campus.
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- Painted cemented bricks (yellow and black) for bordering university roads
- Two newly entry gates have been constructed, first at the university entry and second, near the Academic Block 2
- Regular cleanliness drive has been started and monitored to keep the University environment clean
- Awareness programme on waste segregation and its benefit among the stakeholders has been conducted by different department of the University for keeping campus holistically clean and healthier to live
- An 'Eco Club' Letter No. IQAC/127/23, dated 17/04/2023 as well as a Garden Committee has been constituted to enhance awareness and exhibit the relationship with nature
- Obsolete disposal and auction committee letter No. 3996, dated 23/08/2022 has been initiated for the unserviceable items/equipments/E-waste (s) from the campus.
- Strict actions are taken by the Registrar's office to control air pollution regarding parking and entry of vehicles inside the university premises (Order No. 5852, Dt: 6.10.23 and Order No. 5975, Dt: 11.10.23).

Conclusion

This audit involved extensive consultation with all the campus team, interactions with key personnel on wide range of issues related to Environmental aspects. The audit has identified

several observations for making the campus premise more environmentally friendly. The recommendations are also mentioned with observations for campus team to initiate actions.

The audit team opines that the overall site is maintained well from environmental perspective. There is no major observations but few things are important to initiate urgently are waste management records by monthly inventory of hazardous waste, rainwater harvesting recharge; water balance cycle and periodic inspection of buildings housekeeping and environment policy.


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