Environmental Management

The Andhra University being the premier institutions, established in the year 1926, is committed towards better environmental practices providing guality ecosystems across the campus. Since, its inception the Environment, Health and Safety (EHS) are one of the core values of the Andhra University. As part of it is promoting the wellness through implementation of several initiatives and one among it is yoga and wellness practices to all and the environmental management i.e. management of wastewater and solid waste; energy generation and utilization, development of green fields, rainwater harvesting, biogas generation as part of organic waste management etc are being actively pursued. The regulations in handling and management of the waste including e-waste and hazardous chemical and biomedical waste are being followed in the campus. The objective of the implementation of various environmental management best practices is fundamentally to promote good environment, health & well being and resource conservation. The usage of hazardous materials or chemicals is being minimized through accountability. It is important to note that the support of management structures which is an essential prerequisite when implementing environmental efforts is the prime inspiration for the success of the environmental management programs. There are several environmental management practices being implemented in the university. Some of them are briefly referred here.

1. The Andhra University implemented a comprehensive rainwater harvesting systems in the entire campus. The initiatives are appreciated by the DST, Govt. of India and it supported a rainwater harvesting project in the Andhra University. The new addition to this is the recent inclusion of rainwater harvesting pond besides the Algorithm building in North campus which is shown in Figure 1.







Figure 1. The Rainwater Harvesting Pond besides the Algorithm Building in North Campus

2. The development of kitchen gardens is part of the best environmental practices which uses the rainwater and kitchen water for the harvesting of vegetables in the campus. The vegetables are used in the hostel kitchens. Typical kitchen gardens grown in the A.U. campus are shown in Figure 2.



Figure 2. Typical Kitchen Gardens grown in the A.U. Campus

3. The sewage generated in the campus is connected to the municipal sewerage system and it will be treated in the Sewage Treatment Plant (STP) of the Greater Visakhapatnam Municipal Corporation located at Appugarh. The sewage generated at isolated facilities where there is no connectivity to the sewerage system are connected to septic tanks.

4. The unserviceable items from various facilities of the Andhra University are processed as per the **Resource Recovery and Reuse (RRR)** policy of the university, which is a unique policy in a higher educational institution. This policy is being adopted as the state policy in all higher educational institutions / universities.

5. The solid waste generated in the campus is being collected using solid waste collection bins for onsite storage. Such solid waste stored in the primary bins is being

collected by the Greater Visakhapatnam Municipal Corporation (GVMS) through their collection services. The rubbish will be subsequently transferred to the transfer station and then to the Waste to Energy plant in Kapuluppada, Visakhapatnam. Typical primary storage bin is shown in Figure 3. The canteen waste will not join these bins as these are designated to receive not putrescible waste only. The organic waste is segregated for collection and transported to the Vizag Bio Energy Fuels Pvt Ltd.



Figure 3. Typical Primary Storage Bin Placed at Different Places in the Campus

6. The organic waste is used for the generation of the biogas and the same biogas was used in the kitchens. Two bio digesters i.e. one in the south campus and one in the

Maharanipeta Hostel complex are installed to utilize the kitchen and food waste for the generation of biogas. Typical digester is shown in Figure 4. These were in operation till the COVID-19 lockdown.



Figure 4. Typical Digester used for Biogas Production near Science College Hostel Dining Halls



Figure 5. Vermi Compost @ AU

7. Recently, as the biogas plants are not in operation due to the COVID-19 associated lockdown and interruption in the hostel's cooking and dining activities, the Andhra University has entered into an MoU with Vizag Bioenergy Fuel Private Limited, Visakhapatnam to generated the biogas at their premises. The biogas plant is shown

in Figure 5. The Vizag bio will collect the onsite stored organic waste to their premises for gas generation. The process will help in the reduction of Green House Gases (GHGs) emission into the atmosphere. It is an indication of the commitment of the Andhra University to manage the organic waste in the most suitable ways and means.



Figure 6. The Vizag Bio Energy Fuels Pvt. Ltd. Premises with the Digester and the Produced Gas Cylinders

- M-N- (23-24) -
Maridi Eco Industries (Andhra) Pvt. Limited in Pursuit of Clean Environment
Certificate of Membership
This is to certify that M/s. <u>ANDHRA UNIVERSITY HEALTH CENTRES</u> , Waltain, No. of Beds / Clinic <u>- CLINIC</u> <u>Andhra UNIVERSITY</u> , VSP.
The healthcare establishment is a member of Maridi's (Maridi Eco Industries (Andhra) Pvt. Limited), Common Bio-Medical Waste Treatment Facility at Visakhapatnam
Maridi is authorized by the Greater Visakhapatnam Municipal Corporation and AP Pollution Control Board to Collect, Transport, Treat and safely dispose the bio-medical waste, Maridi has been collecting bio-medical waste generated from this health care establishment.
This Certificate is valid from July 2023 to Io JIST Manch 2024.
K. Ramatinga Raju Managing Director

8. The e-waste and the biomedical waste are handled and managed as per the regulations. The biomedical waste is being sent to the Meridi Eco Industries Limited, Visakhapatnam which has authorization to handle the biomedical waste. Similarly, the e-waste is being sent to the authorized e-waste handlers for its handling and further processing. Recently, in the month of December 2012, the e-waste is handed over to M/s Veera Waste Management Systems, Visakhapatnam. the University is adopting the e-waste(management) rules 2022, as directed by the ministry of environment, forest and climate change, Govt. of india.

https://www.andhrauniversity.edu.in/img/E-Waste-Management-Rules-2022-English.pdf

9. The chemical waste generated from various chemical laboratories contains non hazardous and very few hazardous chemical waste, which is very limited quantity. Approximately 20 to 30 liters of such chemical waste will be accumulated in a semester. The hazardous chemical waste is stored at the designated places in the laboratory / department. These are labeled properly with the description of the contents in the container with the warning symbol. After they reach the possible maximum quantity, those will be sent to the authorized treatment operators in Visakhapatnam. The drainable acid or base chemical are neutralized and diluted with water before disposing them off into the wastewater drain. https://cpcb.nic.in/hazardous-waste-rules/

10. The Andhra University is known for implementation of the best practices and one of it is implementation of the net zero energy program. This will be achieved progressively. The Andhra University is already installed solar energy generation systems on almost all the building roof tops. Typical PV Panel intended for the development of solar power is presented in Figure 7. The recent audit report indicates that the Andhra University could able to annually generate 18,76,100 kW electricity /power.



Figure 7. Typical PV Panel Intended for the Development of Solar Power

11. The development of green fields is part of the environmental management practices of Andhra University. This enabled us to make the campus a green campus with lush green trees and plants. The greening is a continuous process and in future, the university will try to plant medicinal plants wherever feasible. The students are encouraged to plant plants and grow trees and there is an incentive for each plant/tree to survive due to the continued efforts of a student on the campus. The campus's calmoss and groups are attracting.

calmness and greenness are attracting residents for their morning or evening walks.



Figure 8. Green Canopy on the campus











Maredu (Aegle marmelos)



Veepachet (Azadirachta indicaa)



Devakanchanam (Bauhinia purpurea)



Moduga (Buteamonosperma)



Bottlebrush (Callistemon lanceolatus)



Ponna (Calophylluminophyllum)



AloeWood tree (Cordia sebestena)





Reela chettu (Cordia sebestena)

Aloe Wood tree (Cassia fistula)

Figure 9. Plantation of Medicinal plants on the campus

These are some of the measures aimed at environmental protection through the reduction of impacts due to improper disposal of various waste materials.

There is an exclusive sanitary and beautification wing at the Andhra University. It takes care of the activities related to the maintenance of the campus **CLEAN AND GREEN**.

Audit Certificates:











This is to certify that Environmental Management System of

ANDHRA UNIVERSITY

VISAKHAPATNAM - 530003, ANDHRA PRADESH, INDIA

is in accordance with the requirements of the following standard

ISO 14001:2015 (Environmental Management System)

SCOPE

nduct, monitor & analyze complex activities of the University and for its affiliated colleges like Centralized Admission, Centralized Examination, Research Activities, Awarenees on mental Issues, Implementation of Environmental Systems and Award of degrees & certifications. To c Environ

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