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Green Management: A study of best green practices in Haryana Private Universities

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Abstract

As per the current condition of environment degradation, most of the higher education institutions are working on making the campus green and implementing sustainability in curriculum as well as working of institution. The current study focuses on green management of campuses of private universities of Haryana on operational aspect of institution and determine the best practices that were adopted and should be adopted in order to implement sustainability processes. Green management means the integration of principle of Management and environment management that form the relationship between environment and management. The data is collected from, private universities of Haryana through studying the documents, website and interview of competent authority of universities. Based on the research, concept of green campus has been purposed which involve the smart sharing of resources, development of green buildings and reducing the use of transportation and carbon footprints. In addition, the study also conclude that sustainability and green management should be made the integral part of the attitude of students, scholars and staff members for making the campus green. So, the best practices should be adopted across various area of institution for making the environment sustainable green campus and forming the positive attitude of students and staff members towards sustainability.

KEY WORDS: Green Management, Daily Practices, Sustainable Development, Best Green Practices

Objective of the study

The main objective of the study is to collect the input from private universities of Haryana in order to find out the green management in campus and find out the area of improvement for making them for sustainable and green in years to come.

Methodology

Qualitative research design is used in current study by employing case study approach of qualitative inquiry to study green practices in depth in Haryana Private Universities. Three oldest Private universities are selected as sample unit. This study focuses on operational parameters out of the parameters in respect of four area including administration, curriculum and research area, explored by ***Maryam Faghihimani (2010).*** Primary Data of this study have been collected from 3 private universities through observation, photographs, and in-depth interviews of experts, relevant authorities, professors, research scholars of the and various stakeholders. Analysis of secondary literature including policy statements, university documents etc. have also been done. The parameters of the study are as follow:

- Energy
- Carbon emission
- Waste recycles
- Green building
- Purchasing
- Water
- Food & Dinning
- Paper
- Housing Sustainability Management system
- Installation of innovative & new technology
- Conservatism
- Transportation
- Fair trade
- Chemical material
- Green lab

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Study area

Private University of Haryana are the main study area of the current study. There are 22 Private universities in Haryana as per UGC List. Three oldest Private universities are selected as sample unit which are as follow.

O.P. Jindal Global University:

The O.P. Jindal Global University is the oldest and non-profit global university establish in 2009 by Government of Haryana and recognised by University Grant Commission. It is one of the India's most promising humanities and liberal arts universities and committed to their core institutional value of interdisciplinary and innovative pedagogy, pluralism and rigorous scholarship and globalism and international engagement. The university got rank among top 3 percent and among top 450 in QS Asia league table in QS BRICS University Ranking 2019. (university website).

Amity University, Gurugram:

"The Amity University has been established in 2010 by Haryana Act no 10 of Government of Haryana and recognised as per sec. 2(f) of the UGC Act. The university inherent all the qualities that have made amity institution world class over the last two decade. It has instituted global standards in education, training and research with state- of -the -art infrastructure and the latest teaching methodology. It is India's only and Asia's 2nd university to be awarded LEED (USA) Platinum certificate" (university website).

North cap University:

The North cap University is established as private university in 2009 by the name of ITM University under Act no 25/2009 by Legislature of State of Haryana and recognise by UGC under sec. 2(f) of the UGC Act renamed as North Cap University in 2015 vide Haryana Government Ordinance No. 2 of 2015. It is the leader amongst the private universities in Delhi & Haryana in the NIRF ranking, conducted by Ministry of Human Resource Development (MHRD), Government of India for the year 2019 and it has been ranked 117 in engineering category and rank band of 151-200 in the university category in All India NIRF ranking survey 2019 among 970 institutions" (university website).

Introduction

Green management means the integration of principle of Management and environment management that form the relationship between environment and management. The green management start from the adaptation of environment and green principles into mission and vision statement of institution and converting the same into organizational and managerial processes. In the modern era, everyone is moving towards convenience. These conveniences are achieved at the cost of environment; as a result, environment is being degraded due to the heavy demand of conveniences in life. Human is moving towards the distraction of environment for the sake of their wealth and material development. Environmentalists and researcher have found out that the current patterns of development were affecting the Environment negatively and this problem is increasing day by day (Johnson, 2007).The wisdom and farsightedness of human inform about the irresponsible use of environment and science represent that preventive and corrective measure is must for securing environment for the future generation (Mathews,2018). The educational institutions like universities also cause serious environment pollution in the form of energy and material consumption via activities and operations in teaching and research, provision of support services etc., which could be considerably reduced by an effective choice of organizational and technical measures. Now the educational sector is also taking initiatives toward environmental concern. ***Alshuwaikhat and Abubakar (2008***) in their research revealed that many environmental protection measures can be seen at some universities, but a more systematic and sustainable approach, to reduce the negative impacts of those activities and making the campuses more sustainable, is generally lacking. **Faghihimani in (*2010)*** says that, a global trend among universities shows that they are revising their mission and restructuring their courses, research programmes and operations on campus to include sustainability in their perspectives. So, in higher education institutions, institution goal and environment goal should be equally considered by the administration for incorporating the sustainable development in long run. The current study examines the implementation of the different components which make the campus green.

Green Management

There is no specific definition given by researcher and practitioners of green management in spite of its managerial applicability in the direction of environment sustainability (Pane et al., 2009). In generalization, it involves four attributes which include preservation of natural environment and protecting it from harm,

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conserving the natural resources by cutting their use to the minimum level, evading and reducing environment pollution and enhancing natural environment by utilising and adding renewable sources (opatha & Arulraj (2014). So, Green management means the integration of principle of Management and environment management that form the relationship between environment and management. In other words, Green management means developing the strong foundation of environment management through involving environment responsible personnel, implying environment management system and effective environment communication for conserving bio-diversity.

Green Management in private universities of Haryana

Table 1

Operational & Daily Practices

Operational & Daily Practices Parameters	O.P. Jindal Global University	Amity University	North Cap University
Energy:	➢ Make maximum provision of uses of daylight through planning sitting of vegetation, locating windows close to sealing and using eye reflection ceiling and walls etc. ➢ Minimize electricity uses through installing artificial lighting with different colours and CFL. ➢ Conserve electricity through using variable frequency drive motors in pump, installing PLC control DC sets and following ECBC norms in respect of transformer and motors. ➢ Utilizing renewable energy through installing solar panel up to the capacity of 200 KW and solar water heating system.	➢ Conserve electricity through installing LED lights and making sun can escape between the buildings and placing windows in such a way for utilizing sun light and natural air. ➢ Utilizing renewable energy through installing solar panel up to the capacity of 330 KW. ➢ Produce biogas through dairy waste of the dairy farm.	➢ Equipped LED lights and fall ceiling to reduce load of heat in buildings and conserving energy. ➢ Install 150KW solar power station as renewable source of energy.
Carbon emission	➢ Fly ash bricks are used in pathway. ➢ Make documentation of students in E format through D Space/FTP server. ➢ Transfer information in electric format through email. ➢ Conduct tree plantation drive. ➢ Maintain almost 50% area of campus green in which 7205 trees,	➢ Develop natural vegetation through planting the thorns, shrubs and bushes, trees like Neem, Bargad, etc. ➢ Done plantation which is suitable to the climate. ➢ Conduct survey of butterflies and birds to reflect ecology. ➢ Discourage single use plastic and replacing	➢ Maintained a very vibrant and green gardens in the campus with various kinds of trees and shrubbery. ➢ Covered six acres of green area with green footprints out of 10 acres of the campus area.

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	118312 shrubs and 161920 sqm area is covered with grass.	plastic slowly in phase wise manner.	
Waste recycles	➢ Install warming composite unit for segregating and recycling solid waste. ➢ Fixed sewage treatment plant upto the capacity of 400 KLD for liquid waste. ➢ Collect waste paper and convert them in to favourable outcomes through making agreement with some specialized agencies. ➢ E-waste of the university is managed and handled as per the rule of HSPCB, 2011.	➢ Develop composite unit to convert dairy base in to biogas. ➢ signed an MoU with Mahatma Gandhi Institute for Rural Industrialization (MGRI) at Vardhain respect of technological transfer for resource recovery from the waste. ➢ Make agreement with recycle agent for collecting waste of the campus. ➢ Encourage screening of waste through placing to or three type of garbage beans.	➢ Transfer garbage to municipal corporation of Gurugram for disposal. ➢ Install sewage treatment up to the capacity of 100 KLD. ➢ Segregate and reused e-waste of the campus where relevant. ➢ Remaining e-waste hanging over to external vender. ➢ Tie-up with Hindustan Times for recycling waste paper.
Building	➢ Construct green building through utilizing maximum sunlight and minimized the use of electricity. ➢ Used fly ash bricks and constructing building. ➢ Install LED lights. ➢ Locating windows close to sealing. ➢ Utilize ground surface to reflect day light into building. ➢ Plan sitting of vegetations to reduce frown of sunlight.	Maintain LEED certified campus through utilizing green building concept.	➢ Install last glass panels to ensure maximum sunlight in buildings. ➢ Fixed LED lights and fall ceiling to conserve electricity. ➢ Fixed Sensor board water tabs. ➢ Fixed water pipe in construction of the walls of buildings.
Purchasing	➢ Try to purchase bio degradable goods. ➢ Minimize the use of lad, insecticide and pesticide and another harmful toxin material. ➢ Prefer local market for purchasing.	➢ Prefer to purchase eco-friendly goods from local market.	Prefer purchasing eco-friendly product like LED lights and sensor board water tabs from local market.
Water	➢ Develop 38 rain water harvesting pits. ➢ Install sewage treatment plant up to the capacity of 400 KLD based on Moving Bed Biofilm Reactor (MBBR) type technology.	➢ Develop rain water harvesting system. ➢ Install waste water treatment plant.	➢ Construct five rain water harvesting structures. ➢ Fixed Sensor board water tabs. ➢ Install sewage treatment plant.
Food and Dinning	Veg. and non-veg. both diets.	Only veg. diet.	Only veg. diet.
Paper	➢ Replacing hardcopy	➢ Utilize use amazon	➢ Replace paper with e-

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	with e-documentation on phase wise manner. ➢ Use software like ERP, TCSIM for digitalizing the campus. ➢ Promote two side printing on paper but doesn't make any policy regarding this. ➢ Discourage paper plates and cups but not banned completely.	software for maintaining database of students. ➢ Prefer to side printing. ➢ Paper plates and cups are still in use in university cafeteria.	documentation at most of the places. ➢ Amplifies both side printing of paper. ➢ Discourage paper plates and cups among students. ➢ Convert waste paper in useful product through NGO's. ➢ Tie-up with Hindustan Times for recycling waste paper.
Housing Sustainability Management System	➢ Provide modern energy efficient infrastructure through conserving energy, water and minimizing waste.	Construct LED certified buildings in which green aspects are focused.	➢ Utilized solar energy as renewable source of energy. ➢ Install LED lights, wall ceilings, large glass panels for conserving energy.
Installation of innovative & new technology	➢ Use fly ash bricks. ➢ Utilize tenable source of energy through solar panels and utilizing daylights.	➢ Install online air pollution monitoring service station through collaboration with Indian Institute of Tropical Metrology. ➢ Use non-convention source of energy including solar and biogas energy and working on generating energy from kitchen waste of the campus.	➢ Establish a centre for creativity, innovation and entrepreneurship. ➢ Celebrate annual technical phase event in campus. ➢ Provide the best project award to encourage in staff towards research. ➢ Provide best B.Tech. project award to students with a cash prize up to 1 lac from the V.C. Innovation fund.
Conservatism	➢ Install LED lights and solar plant to conserve energy. ➢ Developed rain water harvesting pits and sewage treatment plant for treating waste water and make it reuse. ➢ Replace hardcopy with e-documentation through email or software for conserving paper.	➢ Utilized solar and biogas energy through installing solar plant and biogas plant for conserving energy. ➢ Install waste water treatment plant and rain water harvesting system for conserving water. ➢ Use amazon software for implementing e-documentation. ➢ Support reuse and repair at place of disposal.	➢ Install solar panels and LED fixtures for conserving energy. ➢ Support video conferencing facility. ➢ Develop rain water harvesting pits and sewage treatment plant for conserving water. ➢ Replace paper with e-documentation at most of the places. ➢ Recycle waste paper through tie-up with external agencies.
Transportation	➢ Promote eco-friendly mode of transportation through encouraging vehicle pooling and providing shuttle services to faculty members. ➢ Provide vehicle	➢ Motivate car-pooling. ➢ Providing parking space near to the gate. ➢ Facilitate video conferencing service for interview. ➢ Celebrate environment related days for	➢ Encourage car-pooling through inducing odd/even number cab. ➢ Prefer local market for purchasing. ➢ Support video conferencing service during seminar,

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	parking space at gate of university. ➢ Support local market for purchasing. ➢ provide video conferencing services. ➢ Celebrate environment related days for creating awareness.	creating awareness.	meeting and interviews.
Fair trade	Discourage purchasing from unfair trade practices vender through black listed them.	Prefer vender who follow fair trade standards.	Prefer purchasing from vender who follow fair trade standards.
Chemical material	➢ Minimize consumption of chemical fertilizers and replace that with organic fertilizer. ➢ Utilize non-volatile paints.	Avoid to maximum extent.	Discourage totally and prefer the safe disposal of chemical waste.
Green lab	Follow every aspects of the green lab.	Develop LEED certified labs.	Adopt all green measures in labs.

As per current condition of natural resources and environment, environment sustainable and green management is the requirement of today. As per the data collected for the current study, all the universities of Haryana have taken number of initiations to making the environment sustainable campus and promoting sustainable development. Some green initiations which common in all the universities are as follow:

Best Practices:

- **Maintain green cover in campus:**

All the private universities of Haryana are working on maintaining the green cover in campus. The authorities try not to plant trees anywhere, and trying to minimise damage to the plants, vegetations and surrounding environment. Jindal Global University (JGU) has maintained 50% of their area as green. Amity University has maintained not only the natural derang pattern in the system but also the natural vegetatin of the campus for carbon emission. Different patches in buildings have been made for developing several natural vegetations like the thorny shrubs and bushes, trees like Neem, Banyan (Bargad), etc. and new plantation have been done in the campus, which is suitable to the climate for their area. The Northcap university have also maintained a very vibrant and green gardens in the campus with various kinds of trees and shubbery and have covered six acres of green area with green footprints out of 10 acres of the campus area.

- **Focus on green infrastructure:**

  All the private universities of Haryana are focusing on developing environment friendly infrastructure. All the new buildings are constructed on green building concept which is described by Green building council. The Amity university is being awarded as LEED certified campus by US GBC. JGU have made the provision of optimum use of skylights in buildings. Ground surface of the open spaces has been used to reflect daylight into the building and planned siting of vegetation is considered to reduce the glare of the sunlight. Apart from this, university is having modern energy efficient campus, green buildings are constructed in the institute in which efforts was made to minimise use of electricity and energy. In university buildings fly ash bricks were used which is environmentally friendly and all the old lights have been replaced with LED energy efficient lights. The North cap university also have the innovative campus where the maximum efforts have been made for conserving energy, water and electricity.

- **Use renewable energy sources:**

  All the private universities are in process of making and utilising renewable energy like solar energy, bio gas energy, etc. The JGU has installed the solar panel up to the capacity of 200 kw. which is 5

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percent of total electricity consumption of the institute and also planning for installation of biogas plant where all the green waste and all the food waste will be used in that plant which will ultimately generate electricity. The Amity University have installed the solar panels with the capacity of 330 Kw which is 10 percent of total electricity consumption of the institute and planning to increase it up to 50 percent in next 5-10 years. Apart from solar energy, the university also have dairy farm where dairy waste of the university is used in bio-gas production to meet the indigenous demand of dairy like cooking and have an ambitious plan for kitchen waste as lot of food waste in campus. so, University is planning for generating a new type of energy mechanism through the kitchen waste. A 150 Kw solar power station at the cost of 1 crore has been set up in the campus of North cap University.

- **Install Sewage treatment Plant:**

Sewage treatment plant (STP) have been installed in most of the private university of Haryana where the university waste water is treated and after treatment the affluent is being utilised and reused for gardening and for horticulture purpose. The JGU has installed sewage treatment plant up to the capacity of 400 KLD based on Moving Bed Biofilm Reactor (MBBR) type technology and Amity university recycle 100% of their waste water and The North cap university have also installed 100 KLD capacity plant to ensure zero discharge to Municipal's sewer line.

- **Install rain harvesting system:**

All the private universities have realised the gravity of water falling level of ground water. So, the arrangement has been made to resort to the rain water harvesting to recharge the ground level water. The JGU have 38 rain water harvesting pits to recharge the ground water level and Amity university have maintained100 percent recharge of ground water through the rain water harvesting, so not a single drop of water is left, it finally goes to ground water in the campus itself. The North cap university have constructed 5 rain water harvesting structures in which a pipe of 8" diameter goes to 300 feet below the ground so as to reach the aquifers and zero discharge of rain water beyond the campus.

- **Digitalize campus:**

All the private universities are working on making digitalize campus. All the universities are the supporter of E-documents and encourage that in their campus. The hard copy has been replaced with e-document to the great extent due to which all the information is circulated through email among the faculty members. The paper has been replaced with e-documents in the campus at most of the places like financial transactions, office work and students related records except marksheets or degrees. The JGU is using software like ERP, TCSIM for digitalize the campus as most of the purchase's approval can be got by the authority by using TCSIM software. The Amity University uses the amizone software which provides a platform for maintaining the record of everything in e- format. All the data like admission of the students, examination details, attendance details, assignments details, etc. which is recorded through this indigenous software. Even the leaves of the staff members as also sanctioned through online mode.

Area of Improvement:

In spite of various initiations taken the university still there is some area where improvement is required for making the sustainable campus and conserving the natural resources and environment. These areas are as follow:

- **Dedicated Department should be established:**

A dedicated institute or department of environment science should be established in all the private university which provide the professional courses in environment protection and preservation. Only the Amity University have developed a specialized department as 'Institute of Earth and Environmental Science' which is responsible to drive this agenda. This is the Nodal Department of the university which is wholly concerned to conducting research and providing education in respect of environmental sustainability. The JGU have chief sustainability officer and green manager who look after all these aspects but does not have specialised department. So, the universities should establish the specialised department which will be responsible for imparting professional environment education conduct research and look after environment sustainable and green management in campus.

- **Plastic in campus need to be banned:**

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Use of plastic is still in use in some private universities in form of Cold drink bottle, water bottle, rappers, disposable glasses, etc. which are very harmful of the environment. Single use plastic is completely banned in Amity universities only. but no other private universities have taken such initiative. So, all the private university should not only ban the single use plastic but should also create awareness to avoid use of plastic among students, staff members and society.

- **Paper cup and paper plates need to be banned:**

Use of paper cups and plates also provide the negative impact on the environment as these are made from tree which is the cause of deforestation. Deforestation provide the negative impact of environment and natural resources. The private universities of Haryana avoid their use in campus but does not banned it completely. So, all the universities should completely ban the use of paper cups and plates with in the campus.

- **Strict rule of both side printing on paper need to be made:**

Although all the university have made digitalized campus but still paper is consumed in universities in form of assignments, thesis, exam answer sheets, reports, etc. As paper are made from tree. So, it requires cutting of tree which is very harmful for the environment. Although universities are making efforts to minimise the consumption of paper through supporting e-document but more efforts can be taken in this direction by supporting printing on both the side of paper and recycling it. So, universities should make strict rule regarding it.

- **Use of chemical hazards need to be banned in campus:**

Use of chemical hazards and chemical fertiliser also provide a very negative impact on environment but these are still in use in universities. So, all the private universities should completely ban their use in campus and replace the chemical fertiliser with towards organic fertilisers.

- **Support vegetarian diet:**

Some university like JGU serve the non-vegetarian diet to students in campus cafeteria which affect the environment as its production cause high carbon footprint which provide the global climate change (Choudhary &Kumar, 2017). So, the universities should avoid the non- vegetarian food and serve only vegetarian diet in hostels as well as campus cafeteria.

- **Signboard for conserving resources need to be placed**:

Instruction card should be placed in every department to switch off the electric equipment's or appliances when that are not in use. It will help in conserving the unnecessary wastage of electricity.

- **Different coluor garbage bins should be placed:**

The universities should also encourage the screening of the material and waste through placing two or three different types of garbage beans in the campus, one for plastic waste, one for wet waste and another one for biological waste which is not present in most of the private universities. So, universities should place different garbage beans for properly segregating the waste of campus and disposing it properly.

- **Sensor fitting should be installed in bathrooms:**

As India is suffering from water scarcity, water conservation is one of the challenges in front of people. All the state universities are contributing in it by installing rain water harvesting system and installation of sewage treatment plant for treating and reusing water. Installation of sensor fitting in bathrooms of campus and hostels will also help the university for minimising unnecessary use of water. So, all the universities should replace their bathroom tabs with sensor tabs.

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CONCLUSION:

On the basis of the analysis, it is found out that all the private universities are working on maintaining green management in their campus on operational aspect and trying to cutting their activities which provide negative impact on environment. All universities are making efforts for integrating of principle of Management and environment management through formulating relationship between environment and management. All universities were trying to behave as a socially responsible institution by educating the society about conserving the environment and implementing green practices in the campus. On the basis of the study, best green practices have been purposed to universities that should be implemented in campus which involve the smart sharing of resources, establishment of specialised department and reducing the use of transportation and carbon footprints, etc. In addition, the sustainability and green management should be made the integral part of the attitude of students, scholars and staff members for making the campus green. So, the best practices should be adopted across various area of institution for making the environment sustainable green campus and forming the positive attitude of students and staff members towards sustainability.

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