University of Kashmir

2017-18

Environmental Audit Report

Department of Environmental Science
&
Directorate of Internal Quality Assurance (DIQA)

University of Kashmir
Hazratbal, Srinagar, 190006

Environmental Audit Report

of

University of Kashmir

Prepared By

S. No	Name of Team Member
1.	**Dr. Arshid Jehangir** Assistant Professor, Department of Environmental Science, University of Kashmir, Srinagar-190006, J&K
2.	**Dr. Sami Ullah Bhat** Assistant Professor, Department of Environmental Science, University of Kashmir, Srinagar-190006, J&K
3.	**Dr Manzoor Ahmad Shah** Coordinator, DIQA and Associate Professor, Department of Botany, University of Kashmir, Srinagar-190006, J&K
4.	**Mr. Ishfaq Qayoom Shah** Research Scholar, Department of Environmental Science, University of Kashmir, Srinagar-190006, J&K
5.	**Dr Akhtar Hussain Malik** Curator Centre of Biodiversity and Plant Taxonomy, Department of Botany, University of Kashmir, Srinagar-190006, J&K
6.	**Dr. Aasimah Tanveer** Asst. Professor (contractual) Department of Environmental Science, University of Kashmir, Srinagar-190006, J&K
7.	**Mr. Muneer Ahmad Wani** Research Scholar, Department of Environmental Science, University of Kashmir, Srinagar-190006, J&K
8.	**Mr. Suhail Hilal** M.Sc. Student, Department of Environmental Science, University of Kashmir, Srinagar-190006, J&K

Department of Environmental Sciences

&

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Executive Summary

An environmental audit or a green audit is of paramount importance in context of effective environmental governance. The thrust of this audit report is to highlight the adequacy and effectiveness of interventions and approaches made by the University to tackle some important environmental issues in the campus. The findings and recommendations made in this audit report shall enable the administration to take corrective measures and to frame policies in order to improve the environmental efficiency and governance.

A brief introductory synopsis on green audit has been formulated in this report. The objective of this report is to evaluate the activities being carried in the campus and provide the suggestions and recommendations for incorporation of environmental concerns in university policies and planning. This audit report will provide baseline data regarding the environmental issues prevailing in the campus, like energy consumption, green belts, solid waste management, waste water generation etc.

The data in this report is based on the surveys and the records maintained by the administration of the university and different departments. During the present audit the campus has been divided in to five sections based on data requirement. Standard questionnaire was framed and employed in collection of information and data regarding electricity consumption, energy consumption, water consumption, fuelwood, solid waste management etc. The perusal of the data revealed that university has a good green cover with respect other landuses that provides the cleaner work environment. The energy utilisation depends mostly on electricity generated from hydropower which amounts for about 3500 KW annually. In addition, solar power contributes about 800 KW of electricity to meet its energy demands annually. The water consumption in the university is about 135 litres per person per day. This much of water is used for residential, irrigation and laboratory practices etc. the waste water generated is disposed in underground sewage pits and municipal drainage system. The institute generates about 2000 kg of solid waste per day most of which is contributed by hostels followed by restaurants. About 80% of the waste is biodegradable. University provides collection services for the solid waste and disposal is carried by SMC to Achan Sadapora. In view of the observation the report recommends various measures to modify the existing system to bring the positive changes in order to make the campus safe and environment friendly.

Introduction

1.1 Introduction to environmental audit

EPA defines environmental audit as, "***A systematic, documented, periodic and objective review by regulating entities of facility operations and practices related to meeting environmental requirements***". It is a tool to assess general practices implemented by organization in term of its impact on environment". It shows strength and weakness of organization towards conservation of environment and function in a manner to minimize its harmful environmental impact.

1.2 Need for environmental audit

University of Kashmir lies in the ecologically important area since it is surrounded by two water bodies on two sides viz- Dal Lake and Nigeen Lake- that have been subjected to various anthropogenic interventions. Since the establishment of the university in the area, there has been a significant increase in the developmental activities that have affected overall environmental quality. University being one of the green campuses in Asia, the activities in it were not carried keeping in view the environmental consequences.

Now the need of an hour is to develop an eco-friendly approach to carryout the activities of the university as per the environmental norms. The need of the environmental audit is to provide framework far:

1. To safeguard the environment within the campus.
2. To motivate all stakeholders for optimised sustainable use of available natural resources.
3. To increase awareness among staff and students regarding different issues and solutions related to environment.
4. To enhance skills among the stakeholders to for environmental conservation and protection.
5. To frame the green policies that will enhance the ecological efficiency in the campus.

1.3 Objectives of environmental audit

1. To undertake baseline survey regarding implementation of green practices in the university campus.
2. To identify and analyse significant environmental issues in campus.
3. To generate awareness among masses regarding various environmental issues.

4. To examine the current practices which can have impact on the environment such as of resource utilization, waste management, energy conservations, etc.
5. To provide alternative eco-friendly practices to meet the needs of the campus without affecting the environment of the campus.
6. To improve resource use through reduction in material use, to minimize wastes and to identify recycling opportunities.
7. To prepare environmental audit report and listing the green practices followed by university.

1.4 About the University

The University of Jammu and Kashmir was founded in the year 1948. In the year 1969 it was bifurcated into two full-fledged Universities: University of Kashmir at Srinagar and University of Jammu at Jammu. The University of Kashmir is situated at Hazratbal in Srinagar. It is flanked by the world famous Dal Lake on its eastern side and Nigeen Lake on the western side. The Main Campus of the University spread over 247 acres of land is divided into three parts – Hazratbal Campus, Naseem Bagh Campus and Mirza Bagh Campus (serving residential purpose). Additional land has been acquired at Zakura near the main campus for further expansion of the University. The tranquil ambience of the Campus provides the right kind of atmosphere for serious study and research.

Over the Years University of Kashmir has expanded substantially. It has established Satellite Campuses at Anantnag (South Campus) and Baramulla (North Campus) and three more Satellite Campuses at Kupwara, Kargil and Leh are being established to make higher education more accessible to people living in remote areas of Kashmir valley. The University has also established a Sub-Office at Jammu to cater to the needs of the candidates enrolled with the University from outside Kashmir.

The University is committed to provide an intellectually stimulating environment for productive learning to enhance the educational, economic, scientific, business and cultural environment of the region. The University offers programmes in all the major faculties; Arts, Business & Management Studies, Education, Law, Applied Sciences & Technology, Biological Sciences, Physical & Material Sciences, Social Sciences, Medicine, Dentistry, Engineering, Oriental Learning and Music & Fine Arts. It has been constantly introducing innovative/ new programmes to cater to the needs and demands of the students and the society. The University has marked towards excellence in its programmes and activities. It has been re-accredited as

Grade-A University by the National Assessment & Accreditation Council (NAAC) of India in the year 2011. This is recognition and reflection of the high standard of quality in teaching and research at the University of Kashmir.

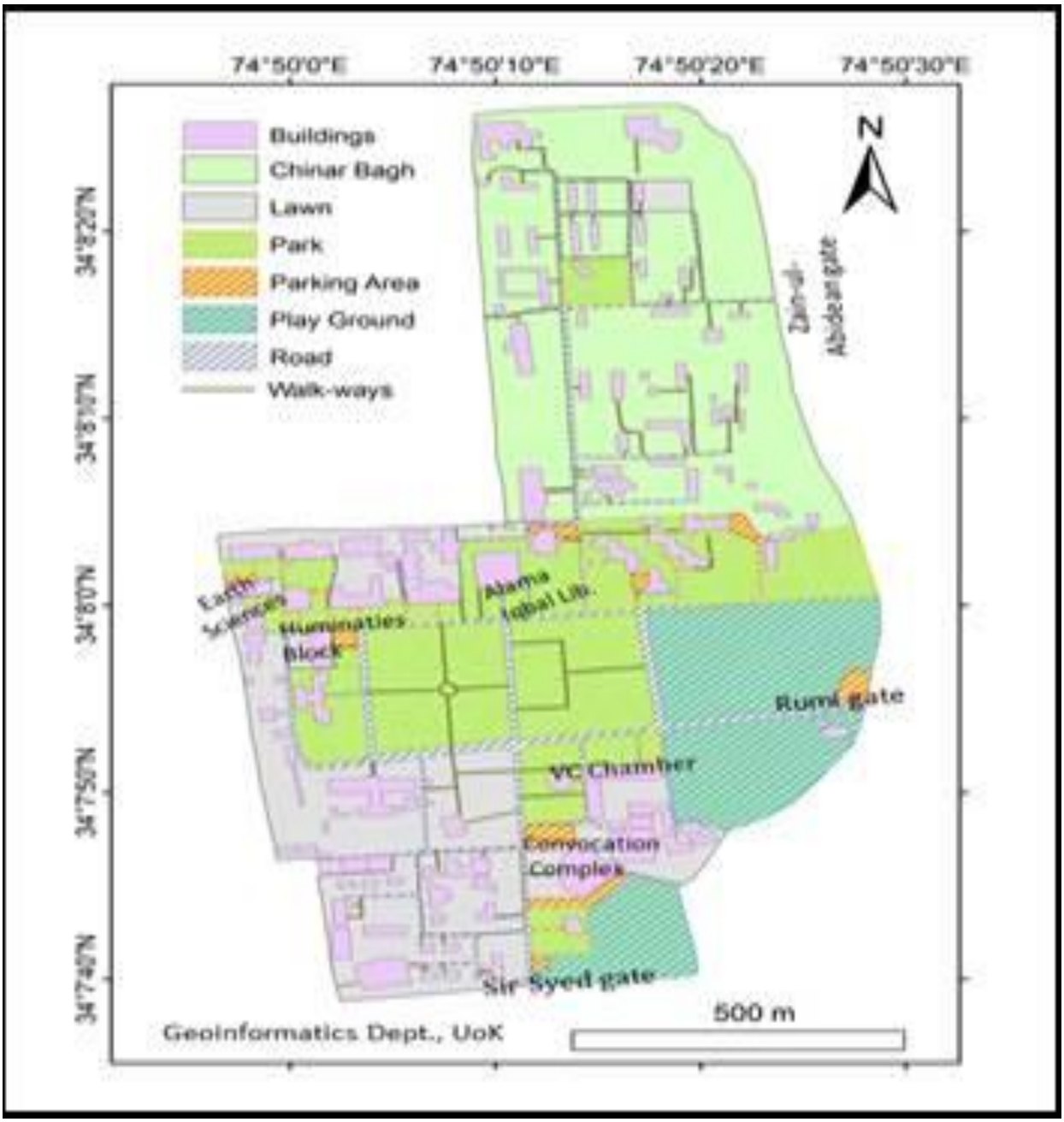

Fig 1. Layout map of University of Kashmir Main Campus
(Source: Geoinformatic Department, UoK)

University offers academic and research facilities to about 16435 students and scholars in various departments and centres. There are 12 faculties, 47 academic departments, 21 centres, 36 colleges and six (privately managed) recognised institutes spread all over the state. A total of 410 teaching faculty and 1885 non-teaching staff are required for smooth functioning of the academic as well as administrative activities in the university.

University also offers accommodation to about 1076 students and scholars. A total of 6 Hostels have been built to accommodate the students, among which 2 hostels are meant for boys, 3 for girls and 1 for male scholar. The details are provided in Table 1.

Table 1. Total intake capacity of the hostels in the university.

Name of Hostel	Total No. of rooms	Total intake capacity
G.K.R.S INN	29	58
M.A.K Boys Hostel	48	192
M.A. Boys Hostel	76	208
H.K girls Hostel	56	176
R.B girls Hostel	41	170
Q.A.H Girls Hostel	53	272
Total	**303**	**1076**

Methodology

The present study is based on survey by questionnaire and the records maintained by the administration of the university and different departments. For well survey whole campus is divided in to five sections, based on data requirement, sets of questionnaires about electricity consumption, water consumption, fuel waste, solid waste collection, transport strength were prepared.

2.1 Survey by Questionnaire

The data regarding various practices that are carried out in the campus was collected using a questionnaire survey. Using different questionnaire formats, combinations and modifications restructuring was done and sets of questionnaires were prepared regarding solid waste, energy, fuel, water, hazardous waste, and e-waste, etc. With the help of questionnaires some data related to environmental audit was collected from students, employees by interaction with them.

All the questionnaires comprises general information of the concerned section, which broadly includes name of the section, total number of students and employees, number of buildings along with area under build up etc. Maintaining records of the handling of solid and hazardous waste is much important in green audit. There are possibilities of loss of resources like water, energy due to improper maintenances and the assessment of this kind of probability is necessary in environmental audit. At some locations in some departments loss of water and major energy consumption was observed due to lack of observation and improper handling of technical equipment's.

2.2 Data evaluation:

A considerable amount of data and information was gathered during the audit procedure. It consists of the audit protocol, documentation supplied by the administration of the University, the auditor's own notes and observations, results of sampling and monitoring photographs, records, plans, maps, audit findings and reviewing documentation against standards, policies and action plans and gathering evidence to support the answers to the questions.

2.3 Analysis and reporting

For environmental audit, the filled questionnaires of the survey from each group, were tabulated as per their modules, in excels spread sheets. The tabulated data was then used for further analysis. For better understanding of the results and to avoid complications, averages and percentages of the tables were calculated. The data regarding plantation was assessed by, Centre of Biodiversity and Taxonomy, Department of Botany, Build up map was formulated by Department of Earth Sciences using digital image processing. Energy, water, air, noise and solid waste generation and assessment was conducted by Department of Environmental Sciences. Graphical representation of these results is shown to give a quick idea of the status and interpretation of the overall outcomes.

Data Analysis

3.1. Land Use

University of Kashmir has a diverse land use for providing all the required facilities to work smoothly. University acquires about 74.66 ha of land under its occupation at its main campus. After digital image processing of the area the map generated provided the information about area occupied by various land uses. Green space and parks constitute about 67% of the landuse followed by build-up (14%), playground (10%) and roads (8%). The data is reflected in Table 2 and fig 2.

Table 2. Area under various land uses in the University main campus.

Landuse	Area (in Ha)
Built up	9.97
Green spaces	15.04
Parks	34.89
Playground	7.59
Road	6.03
Sewage Treatment Plant*	0.23
Vehicle Parking Spaces	0.88
Water tank	0.03
TOTAL AREA	**74.66**

*outside campus

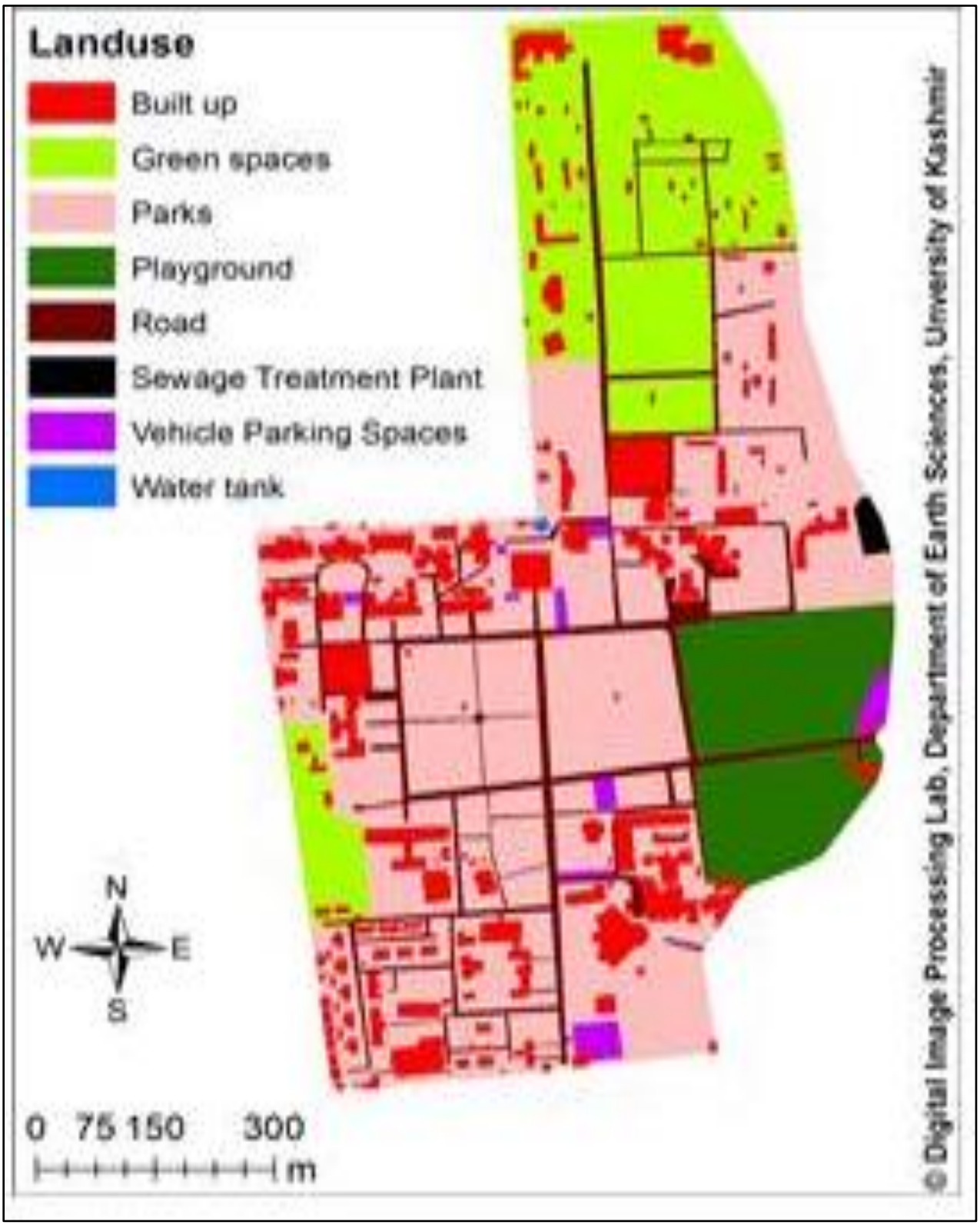

Fig. 2. Land use map of main campus of University of Kashmir.

Source: Department of Earth Science, UoK

3.2. Energy audit

According to the definition in the ISO 50002 standard, an energy audit is a systematic analysis of energy use and energy consumption within a defined energy audit scope, in order to identify, quantify and report on the opportunities for improved energy performance. Energy Audit is the key to a systematic approach for decision-making in the area of energy management. It attempts to balance the total energy inputs with its use, and serves to identify all the energy streams in a facility. It quantifies energy usage according to its discrete functions. The energy is utilized in the campus for transportation, lighting, space heating and cooling, running of lab instruments, appliances, water heating, ground water pumping, cooking, etc.

The data regarding the energy consumption is given in Table 3. The data indicated that the university utilises renewable as well as non-renewable energy sources to meet its energy needs. In terms of monetary value, university spends approximately 89 lac INR for fuel wood and coal which is about 44 % of monetary resources spent on meeting energy needs (Table 4). Most of the energy utilized for lighting, space heating and cooling, pumping, running of instruments is supplied by hydropower generated electricity from state government. University has also installed 800KWP solar power plant in its campus with additional solar panels being installed at various rooftops of different department. In addition to solar and hydropower, diesel generators are installed as backup power in case of power cuts.

Coal and fuelwood is mostly used in winter season for space heating. However, LPG gas is also now widely used for space heating in classrooms, offices, staff rooms and residential houses besides cooking.

Transportation is an important part of any institution that rely on energy consumption. University of Kashmir provides transport facility to the both students and staff. So far university owns 54 operational vehicles of different capacities which are used for pick and drop services to distant areas, field surveys and other purposes. Besides the number of personal vehicles of university staff and students is unassessed. In its eco-friendly approach, the university has brought in use an electrically operated cab that runs within the campus carrying differently abled persons to and fro from respective gates to different destinations inside the campus.

Table 3. Total energy consumption of main campus of the university.

S. No	Energy Sources		Consumption (annual)
1	Electricity	Hydropower	3500 KW
		Solar	800 KWP
2	Fuel	Coal	4610.70 Qtls
		Fire wood	1688.45 Qtls
		LPG	1700 cylinders/yr (23800 litres) approx.
3	Fuel Oil	Petrol	15372 L
		Diesel	100398 L
		Kerosene	Nil

Table 4. Monetary resources spend annually in the year 2017-18 on energy requirements.

S. No	Energy sources	Monetary value (annual)
1	Electricity	26.00 lacs
2	Fuel wood and coal	89.08 lacs
3	Fuel Oil	72.60 lacs
4	LPG*	17.00 lacs
Total expenditures on energy consumption		**204.68 lacs**

- Calculated on basis of number of LPG cylinders utilized by each department and multiplied by total number of department and other administrative wings of the university.

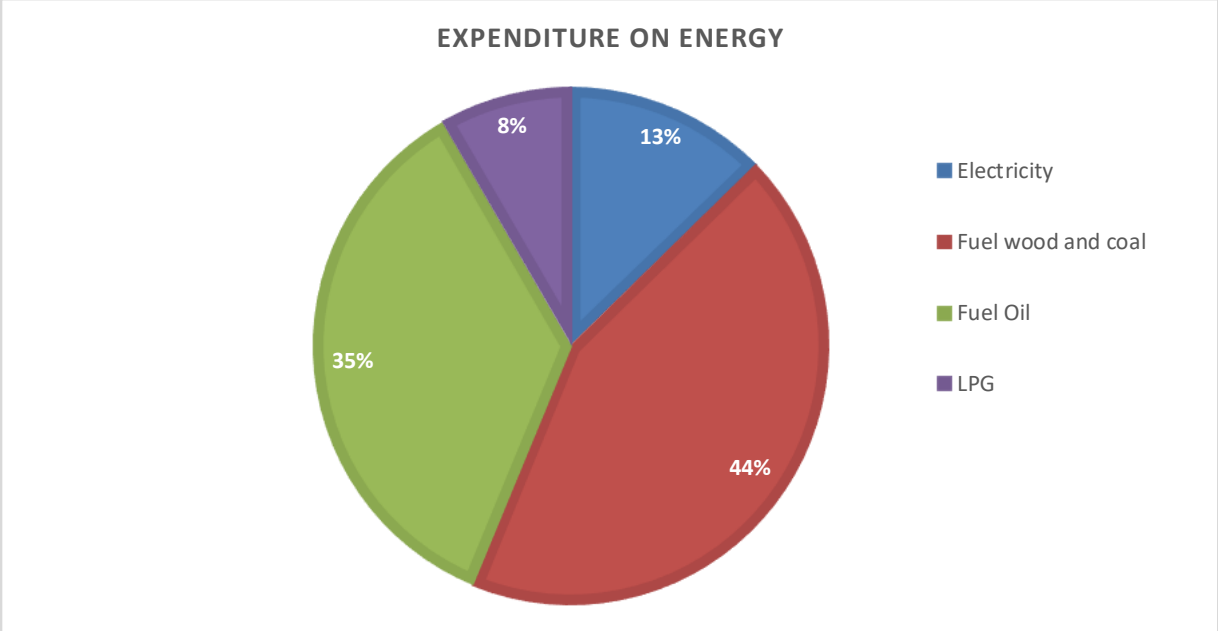

Fig. 3. Percentage wise expenditures on energy consumption in terms of monetary values

Plate 1. Hydroelectric power transformer installed near Allama Iqbal (R.A) Library.

Plate 2. A diesel generator installed near Environmental Science department.

3.3. Water audit

Water audit refers to the conducting of periodic exercises to determine water supplied into the distribution system as well as water lost and/or used within the distribution system. Water audit is aimed to establish the water consumption pattern in the individual sections, bench-mark the consumption levels with respect to best international practices, explore various pollution prevention and wastewater minimization opportunities. Water audits also provide platform to establish the performance of the existing water distribution systems as well as wastewater collection and treatment facilities and explore various wastewater recycling programs. The water is supplied to the university by municipality as well as ground water is used for meeting the water demands. The storage capacity of water is shown in Table 5. The total water consumption in the campus is 5.50 lac litres per day. The per capita water utilisation of the university is 135 litres per capita per day. The utilisations of such a huge resource of water include usage for drinking, cleaning, laboratory usage and also leakages and overflows etc. The expenditures on water utilisation is approximately 6.50 lac INR. The waste water generated is disposed off into the underground sewage tanks and through waste water drainage to municipal sever.

Table 5. Total Water storage capacity in the university

S No.	Storage Resources	Number	Storage Capacity
1.	Overhead water tanks	02	1.75 lacs each
2.	Water tanks	250	1000 litres each
TOTAL STORAGE CAPACITY			**5.90 lac litres**

Plate 3. Water Tanks Installed in University campus and on top of Allama Iqbal (R.A) Library

3.4. Solid waste audit

Solid waste audit is an inventory of the amount and type of solid waste that is produced at a specific location. The solid waste audit is responsible for maintaining the cleanliness and healthful condition by providing an efficient, safe, and regulated management of solid waste and related materials. A waste audit can help your organization reduce waste, which helps the environment and cuts down on your organization's waste disposal bill. Once an organization understands how it is wasting resources, it can begin conserving, recycling, or reusing them instead of tossing them in the trash.

The university has its own collection facility that collects the waste on daily basis from each department. No segregation of the waste takes place during collection. However, studies have been carried to assess the composition of the waste generated in the campus. The data revealed that total generation of the waste in the campus is 2000 kg per day among which biodegradable waste is 1800 kg and non-biodegradable waste contributed about 200 kg. The collected waste is presently disposed by Srinagar Municipal Corporation at dumping site at Achan Sadapora which

is the demarcated site for dumping the waste collected by SMC from Srinagar City. The percentage composition of the waste generated is given in Fig. 4.

Plate 4. Solid waste collection service provided by university of Kashmir

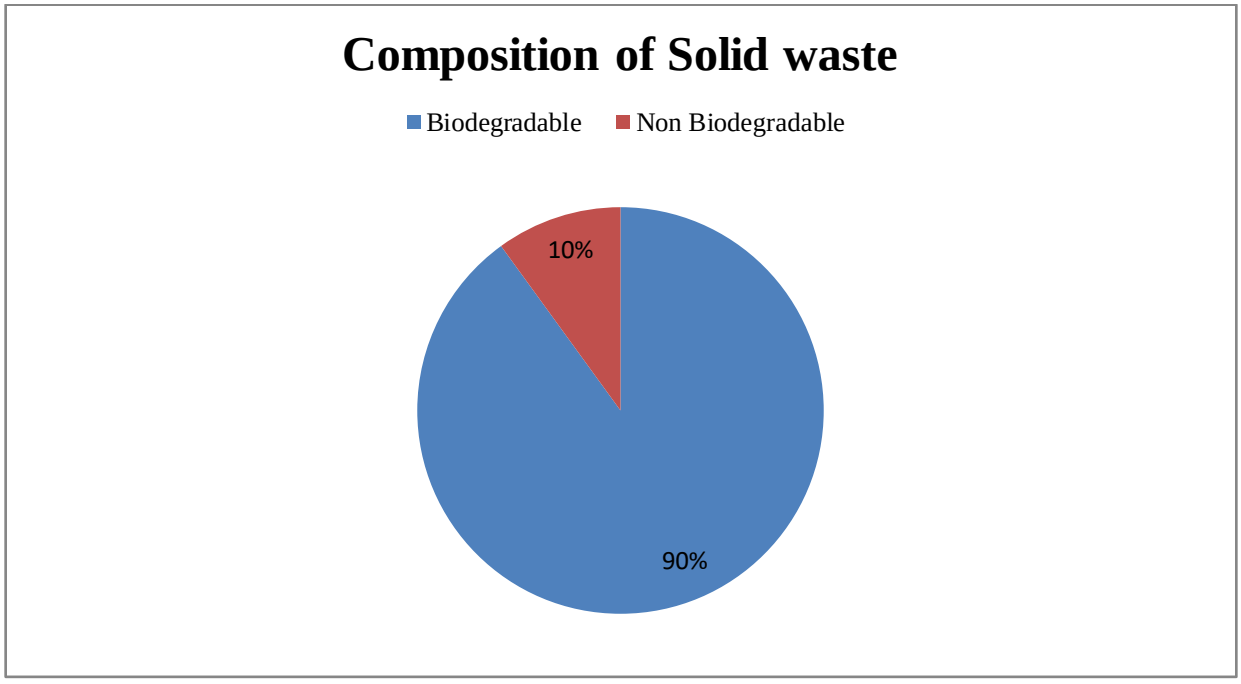

Fig. 4. Percentage composition of generated waste in the campus.

For better understanding of the solid waste problem, solid waste was collected and analysed from few departments and facilities of the campus. These include CCD, restaurant, hostel, guest houses and departments like zoology, botany, chemistry, geology, electronics, biotechnology and environmental science. The results are shown in Table 6. The survey study revealed that

biodegradable waste constitutes significant component of the solid waste in the university, highest quantity of waste were generated in girls hostel followed by boys hostel and restaurants. The waste generated from different departments and centres of the university constituted between 1-4% approximately.

Table 6. Amount of solid waste generated by various facilities in the university

Name of the Department	Total waste generated in one day (kg/day)	Biodegradable (kg/day)	Non-Biodegradable (kg/day)
Zoology	5.30	3.72	1.57
Botany	6.50	5.32	1.15
Chemistry	4.37	2.82	1.50
Geology	2.31	1.95	0.45
Electronics	2.62	1.77	0.80
Biotechnology	6.57	1.30	5.27
Env. Science	2.30	1.27	1.02
Guest Houses	19.50	15.45	4.06
Boys Hostel	57.00	54.75	4.25
Girls Hostel	75.75	65.00	10.75
CCD	7.38	5.45	1.93
Restaurant	7.67	7.27	0.40
Grand Total	**197.28**	**166.07**	**33.16**

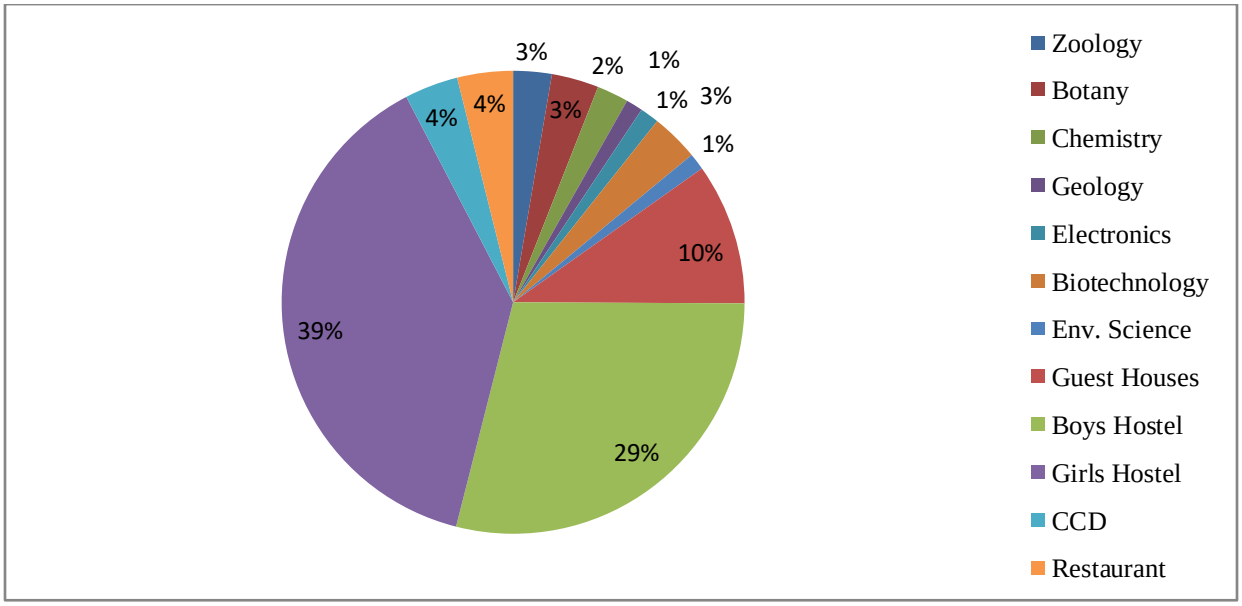

Fig. 5. Percentage of solid waste generated by various facilities and departments in the University campus

Amount the non-biodegradable component of the solid waste, major quantity of waste is recyclable (about 80 %). Among the recyclables, paper constitutes the major percentage while glass, cardboard and plastic also constituted significant percentage of the waste. Non-recyclable waste constituted about 20% of the non-biodegradable waste consisting of dust, garbage, woodchips and inert material. The percentage values are shown in fig. 6, fig. 7 and fig. 8.

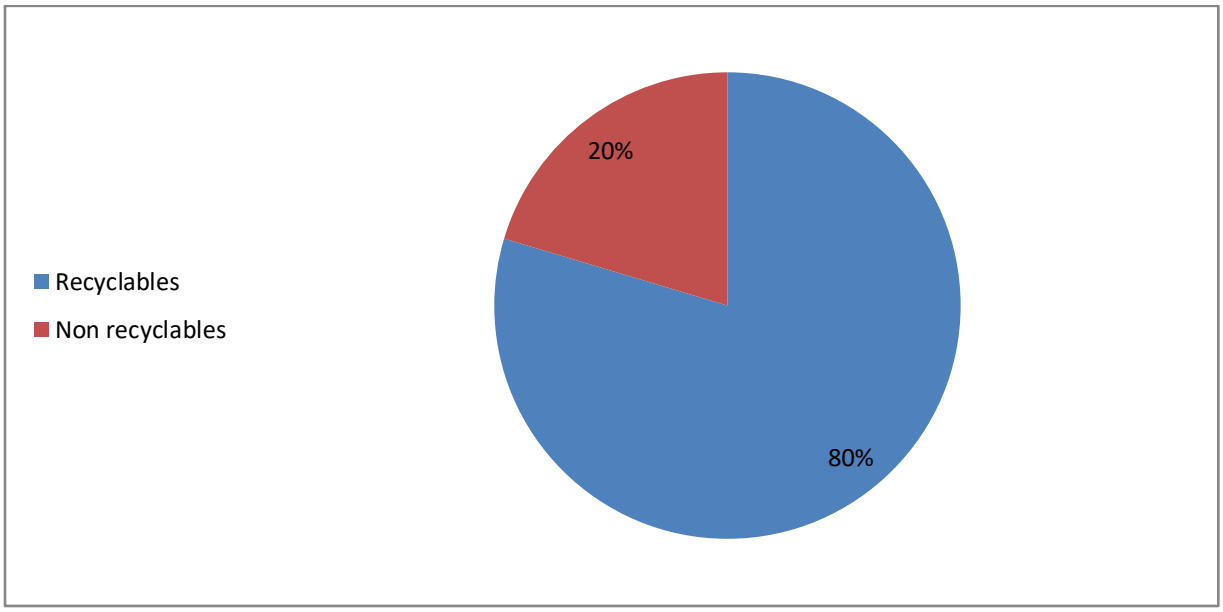

Fig. 6. Percentage composition of recyclables present in solid waste generated by various departments of University.

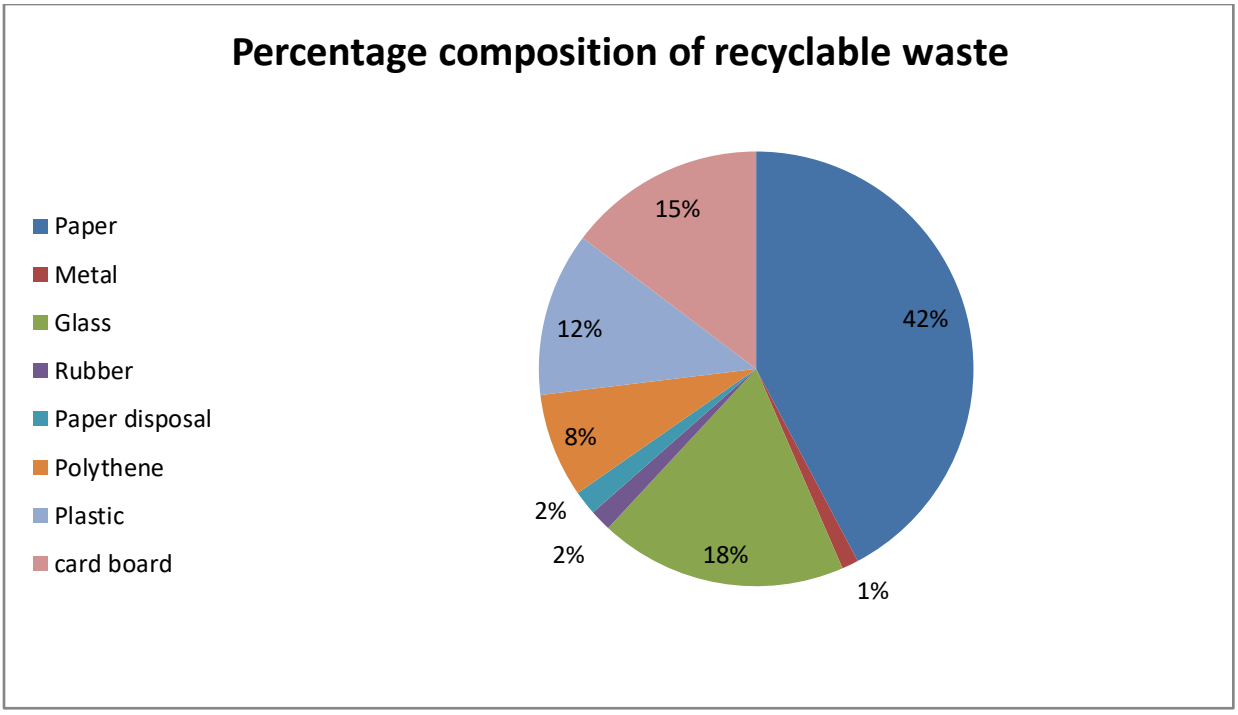

Fig. 7. Percentage composition of recyclables present in solid waste generated by various departments of University

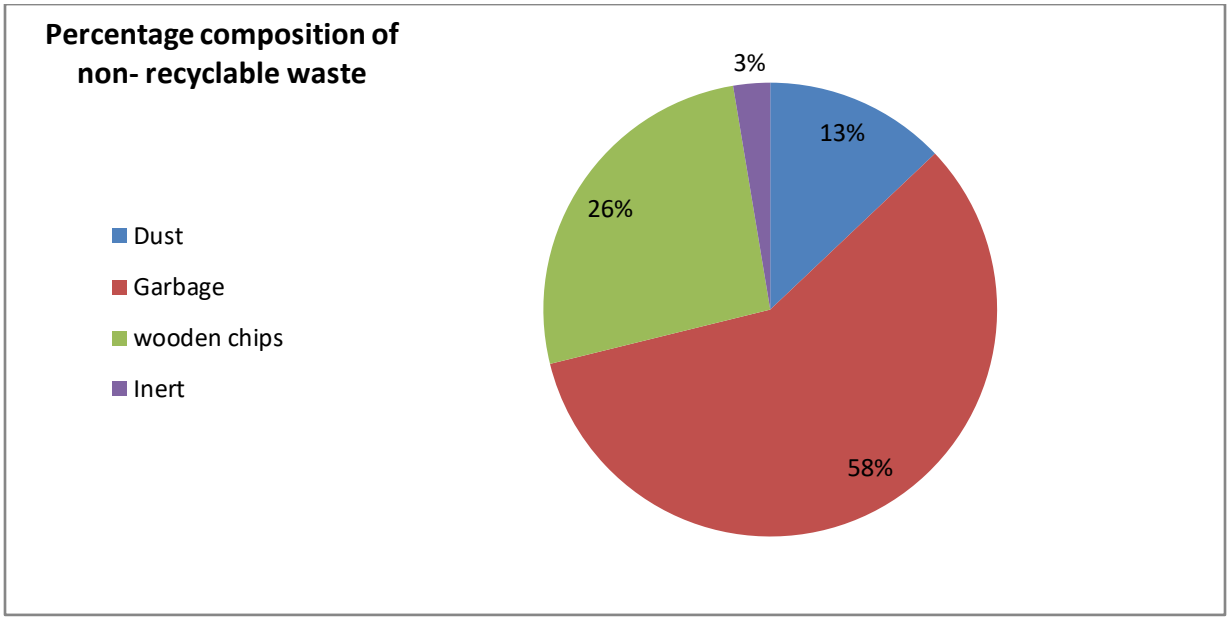

Fig. 8. Percentage composition of non-recyclables present in solid waste generated by various departments of University

3.5. Air and Noise Audit

The study on air and noise quality was carried by department of Environmental Science, University of Kashmir. Air quality data is depicted in Table 7. The noise quality in the campus varied from 50.6 db to 51.2 db during daytime and 43.5 db to 51.5 during night time. The prominent sources of air pollution and noise are vehicles, instruments and machinery present in the university. In winter the space heating and biomass burning contributes to increased levels of particulate matter in the university campus.

Table 7. Seasonal variation in air pollutants inside the University campus (µg/m^3).

Season	PM $_{2.5}$	PM $_{10}$	SO_2	NO_2
Winter	114	242	11	22
Summer	37	52	8	9

3.6. Plantation Audit

University of Kashmir has one of the green campuses in Asia. University has a good plantation cover in its campus. Besides parks, road sides are also flanked with large vegetations. The diversity of different vegetation types are given in Table 8 and 9. The different types of plantations present in the university campus revealed following types of vegetation that shares major proportion of landuse in the campus:

Chinar trees

The green space of the university is mostly occupied by Chinar trees which covers an area of about 15.04 hectors (20%) of land. A total of about 700 Chinar trees have been documented in its Naseem Bagh campus. Located to the north of the main campus at Hazratbal, the garden is abundant with majestic trees (*Platanus orientalis*) commonly known as "Chinar", a Persian word meaning "what a fire" owing to its flame coloured leaves. This Mughal garden was named Nasim Bagh or the Garden of Breeze, for the gently breeze that blew though it built by emperor Shahjahan, in 1635. Kashmir University proposes to develop this Mughal garden Naseem Bagh into a Chinar heritage park.

Plate 5. View of Naseem Bagh Campus

Conifers

Cone-bearing naked-seeded plants belonging to the gymnosperms, which, despite their smaller number of species, dominate the Kashmir Himalayan forests. These include evergreen conifers, such as the indigenous species of blue pine (*Pinus wallichiana*), deodar (*Cedrus deodara*), firs (*Abies pindrow, A. spectabilis*), spruce (*Picea smithiana*), junipers (*Juniperus communis, J. squamata*), yew (*Taxus wallichiana*); and many exotic cypresses (*Cupressus sempervirens*, *C. torulosa*), - (*Thuja orientalis*), Yew (*Taxus baccata*), Chir pine (*Pinus roxburgii*), and – (*Cryptomeria japonica*). Recently, the maiden hair tree (*Ginkgo biloba*) has also been added to this section as an interesting exotic gymnosperm.

Shrubbery

The campus flora contains a large number of shrubby elements, of which species of *Parrotiopsis, Prunus, Sorbaria, Clematis, Spiraea, Indigofera, Skimmia, Zizyphus, Rosa, Sophora, Punica, Viburnum,Sambucus, Lonicera, Cotoneaster, Berberis, Salix, Daphne, Isodon, Rubus, Desmodium,* etc. grow here.

Many exotic shrubs such as species of *Nerium, Hypericum, Chaenomeles, Mahonia, Wisteria, Campsis, Sophora, Euonymus, Ligustrum, Syringa,* etc. are also grown here.

Rosaceous fruits

Kashmir is very famous for the fruits it grows, especially the temperate rosaceous ones. A good diversity of these fruits is maintained in the campus, including various cultivars of apple (*Malus pumila*), pear (*Pyrus communis*), peach (Prunus persica), plum (*P. domestica*), apricot (*P. armeniaca*), almonds (*P. amygdalus*) sweet cherry (*P. avium*), sour ch cherry (*P. cerasus*), Quince (*Cydonia oblonga*), besides loquat (*Eriobotrya japonica*).

Table 8. Number of individuals of different types of trees.

Type of trees	Total number of plants
Chinar	710
Deodar	6000
Fruit trees	500
Willows	200
Populars	120
Cypress	2500
Pine	300
Silver fir	20
Yew	20
Acer	35
Herbs	550

Table 9. Number of species of different plantation types

Plantation type	Number of species
Trees	40
Shrubs	50
Climbers	10
Bryophytes	20
Pteridophytes	10

Summary and Recommendations

4.1. Summary

- This audit report is one of the first attempts made by the university towards the eco-friendly approach to carry on its activities as per environmental norms.
- Major part of the land is under green spaces and parks. The university possesses sufficient manpower for beautification of the campus. The various landuses are green spaces, parks, roads and build up etc. In recent years there has been construction of some new structures that reduced the green cover of the campus.
- University caters a huge number of people during day time and accommodates a good number of students and scholars in its various hostels. Besides university also provides residential facilities to its teaching faculties and non teaching staff.
- The activities in the institute requires a huge amount of energy, a large proportion of which is fulfilled by hydropower generated electricity supplied by Power Development Department (PDD) of J&K govt. University also owns solar power plants to fulfill its growing energy demands. University has also made in use of energy saving lighting devices like LEDs etc to reduce energy consumption. Firewood, coal and LPG is used during winters for space heating in working places. University spends majority of its monetary resources on firewood and coal required mostly for space heating during winters.
- University generates a huge amount of solid waste a large portion of which is biodegradable. Facility for collection of wastes is provided by the institute, no segregation or disposal facility is owned by the university. The solid waste is disposed at landfill site in Achan, Sadapora by Srinagar Municipal Corporation (SMC)
- In a single day university consumes a large quantity of water for various purposes in the campus. The water is stored in large as well as small tanks. Per capita water usage is about 135 litres per day. This huge quantity of water used results in generation of a large amount of waste water which is mostly disposed directly into the underground septic system without any treatment which may have adverse effect on ground water quality and in turn on the human health as university utilizes ground water for various purposes in the campus.
- The university possesses one of the Asia's green campuses. It comprises of vegetation's like chinars, conifers, shrubs, herbs, rosaceous etc. which are meant for beautification of the campus as well as for the environmental benefits. Besides fruit trees have also been planted in the campus to increase the plantation diversity and to invite various faunal species to enhance the ecological efficiency of the campus.

4.2. Recommendations

4.2.1. Build up

University should go for vertical development instead of acquiring more land for construction of its facilities especially the structures required for new departments and residential purposes. This would preserve the green spaces and enhance recharging of the water table. The new constructions will also require land for road construction that would further reduce the available green space. Going for vertical development will reduce all these impacts and can fulfill the needs of the university for newer structures.


Plate 6. Green parks inside University Campus


Plate 7. New building are being constructed on the concept of green building

4.2.2. Energy

The energy requirements are fulfilled by using hydropower that amounts upto 3500 KW. This huge amount of energy is utilized in around 10000 bulbs, IT and Security systems, Lab instruments and heating purposes. The burden on hydropower should be reduced by installing more solar power plants in addition to the already installed plants. The power generated by installation of solar plants might be used in lightening, IT and Security, and also heating purposes. In addition the lights gadgets and instruments must be turned off when not in use. To develop such attitude among the stakeholders strict policies must be implemented to reduce the overall energy utilization.

Use of firewood and coal during winters can be replaced either by LPG heaters or by Solar heating devices. Burning coal and firewood creates air pollution problem in the campus. Changing to LPG heaters and solar powered gadgets will also reduce the considerable amount of monetary resources as well as pollution levels. Besides the green building concept should be introduced in construction of new structures in order to save the energy.

University possesses a good number of vehicles operating on daily basis. To curb the traffic movement inside the campus, authorities have banned the entry of vehicles beyond its various gates. This approach has provided a calm atmosphere in the campus. This approach should be further extended by providing to and fro transportation services from respective gates to different departments using electrically operated cabs. University along with its business partner J and K bank under their Green Initiative programme are allotting a total of 100 bicycles for to and fro movement inside the university and also have allotted an eleven seater electric car for differently abled persons. This approach will also reduce the need to build wider roads and will increase the green space of the university.

Plate 8. Solar panels to be installed on roof tops of various structures.

Plate 9. Solar panels installed on rooftop of EMMRC building.

Plate 10. Solar Power Plant installed near Naseem Bagh Campus.

Plate 11. Electrical cab service inside the university campus.

4.2.3. Water Use

The institute utilizes a large quantity of water on daily basis. The water utilization can be minimized by improving the leakages and over flows by proper maintenance. Further, improved taps with reduced water flow or taps having motion sensors should be installed. Besides the grey water can be utilized for irrigation purpose and flushing of the toilets etc. The waste water should be subjected to treatment prior to disposal.

4.2.4 Solid Waste

Generation of solid waste in the university campus is about 2 tons per day. Since major composition (about 80-90%) of the solid waste is biodegradable, university has planned to bring in use a solid waste composter for composting the biodegradable portion of solid waste. The compost thus generated can be used as fertilizer in the campus. The university should enforce the segregation of waste at source and provide facility for proper disposal of these wastes as per the Solid Waste Management Rules, 2016. Besides colour coded bins should be allotted to each department for segregation of different types of wastes for proper disposal. Polythene must be banned inside the campus to further reduce the non-biodegradable portion of the solid waste. The recyclable wastes like paper, cardboard, glass, plastics and metal should be collected separately and transferred to certified recyclers or rag pickers.

4.2.5. Air and Noise

Air and noise pollution problem prevails due to excessive traffic, burning coal and other machinery running on fuel oil. University should develop bicycle paths for promoting the use of bicycles in order to reduce the traffic in-flow in the campus to cope up the pollution menace in the campus. The campus should also be proposed as no horn zone by the university.

4.2.6. Plantation

University possesses a good number of trees to enhance its beauty as well as to provide a cleaner environment inside the campus. The university should promote plantation of indigenous and endemic shrubs, herbs and trees wherever space is available in order to preserve the endemic flora and at the same time providing ecological services inside the campus. Bare spaces should be covered with grasses to reduce soil erosion and dust generation.