

**Eco-Life Environmental
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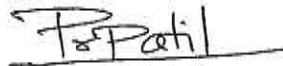
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Certificate

This is to certify that Environmental Initiative Report for the academic year 2021-22 of the "College of Non-Conventional Vocational Courses for Women (CNCVCW), Kolhapur" has been prepared by us based on the document submitted by College of Non-Conventional Vocational Courses for Women (CNCVCW), Kolhapur.

**Prepared and Certified by
For Eco-Life**



Proprietor

Lead Auditor

EMS (ISO 14001: 2015)

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PRINCIPAL,

**College of Non-Conventional
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Kolhapur.**

CSIBER TRUST'S
College of Non-Conventional Vocational
Courses for Women (CNCVCW)
ENVIRONMENTAL INITIATIVE REPORT
2021-22



Prepared By

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Environmental Auditor

Eco-life Environmental Consultancy and Eco-Businesses, Kolhapur

October, 2022




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INDEX

Sr. No.	Description	Page No.
1	Preamble	4
2	Environmental Policy of College	6
3	The scope of green audit	7
3.1	Details of college campus	9
3.1.1	College profile	9
3.1.2	Details of area	10
3.1.3	Land use pattern	10
3.2	Environmental aspects	12
3.2.1	Energy consumption	13
3.2.2	Use of renewable energy	15
3.2.3	Efforts for carbon neutrality	16
3.2.4	Plantation	20
3.2.5	Water management	19
3.2.6	Hazardous waste management	22
3.2.7	Water Analysis Report (Tap Water)	23
3.2.8	Water Analysis Report (Bore Water)	24
3.2.9	Noise Monitoring Report	25
3.2.10	Air Monitoring Report	26
4.0	Suggestion	27





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Kolhapur.

LIST OF TABLES

Table No.	Description	Page No.
1	Details of area	12
2	Land use pattern of college	12
3	Number of rooms in college	15
4	Energy consumption unit	15
5	Electricity produced from different sources	19
6	Carbon foot print	21
7	Details of Carbon dioxide emitted due to bulbs	21
8	Total Carbon dioxide emission	22
9	Plants in college campus	23
10	College strength	25
12	Water requirement	25
13	List of dustbins	29
14	Measures taken by college for environmental conservation	30




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ENVIRONMENTAL INITIATIVE REPORT

1.0: PREAMBLE:

The survival of human race depends upon the surrounding environment. Various environmental factors play critical role in well-being of all living organisms on earth. But in this era of industrialization, we are mainly focussing upon development and economic prosperity and very less attention is provided towards environment. We are continuously over-exploiting the natural resources to raise our standard of living, which in turn leads to environmental degradation. Human activities have led to various kinds of pollution such as air pollution, water pollution, soil pollution etc. This polluted environment leads to the adverse impacts on health of animals, plants and human beings. Along with different kinds of pollution which are faced at local or regional level, we are also facing global issues such as ozone layer depletion and global warming. Now all these things have resulted into increasing world-wide concern about environmental issues.

India is a developing country, which is facing the problem of population explosion. So, there is a burden on available natural resources. This population explosion has resulted in conversion of forest lands for agricultural or residential purpose. It has helped in improving the lifestyle but on the other side it is exploiting the environment. Deforestation has lead to destruction of natural habitats of animals. It has caused extinction of many plants as well as animals.

Along with this, we are also facing the issue of solid waste management. It has lead to soil pollution and groundwater pollution. Areas near cities are often used as solid waste dumping site. People living nearby these areas are facing various health problems and the waste dumping sites can also catch fire sometimes. Industries, commercial areas and residential areas are contributing to the noise pollution as well.

All these anthropogenic activities have caused profound impact on rural areas, urban areas, oceans and forest lands. This indiscriminate development is against principle of sustainable development. After 1970, impacts of these activities were taken into consideration and various conferences were held at international level and many conventions were signed. But still, the problem of environmental degradation is continuously increasing. Therefore, now there is a need of focussing on environment friendly technology. At the same time, we have to reduce the waste generation and switch to reuse and recycling. We should try for sustainable development which will foster the socio-economic prosperity and will secure the life of future




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generations. For this, efforts should be taken at individual, institutional, national and international level.

GENERAL INTRODUCTION:

The green audit was first conducted in the United State of America in 1970s. By 1992, approximately half of the local authorities of UK undertook the green audit completely or partially. The United Nations Conference on Environment and Development (UNCED), which was held at Rio de Janeiro, motivated all the countries to act cautiously to save the earth with sustainable approach. Most of the countries have accepted their national strategy for sustainable development which includes the policy and programmes aimed to promote geo-biodiversity and protect environment. This Rio spirit shows significant progress in most of the countries and they have changed and upgraded the environmental situation to the possible extent. Some of the Asian countries were also motivated from the summit and played same role within their limits. India is the first country in the world to make environmental audit compulsory. According to gazette notification, all Industries were communicated to submit the reports of the environmental audit to their concerned State Pollution Board, giving details of water, raw materials and energy resources used and products and waste generated by them in their operations from 1992.

Green initiative is a tool to protect the environment by adopting concept of conservation of natural resources.

Sustainable use can be ensured by auditing the use of ecological components. The audit is known as regular and systematic review and appraisal of the factors and forces that contributes to realization of objectives.




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2.0 ENVIRONMENTAL POLICY OF COLLEGE:

“Green campus a step towards sustainable development”

Environmental mission:

1. Creating awareness among students and teachers in terms of plastic free campus, energy conservation, rain water harvesting and environmental and social outreach programmes.
2. College seeks to reduce consumption of resources, reuse where ever possible and recycle the same.
3. Implementation of proper principles of solid waste management and reduction of environmental pollution.
4. Ensure staff and students receive appropriate environmental awareness training



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3.0 THE SCOPE OF THE GREEN AUDIT IS DEFINED IN TERMS OF:

3.1. Geographical Location of the College Campus

3.2. Its Environmental Aspects.

3.1.1. COLLEGE PROFILE:

The institute has been named after Rajashree Shahu Maharaj of Kolhapur, who was known for love and affection for the lowest and loneliest of his subjects. He was instrumental in spreading education and message of equality amongst the people in the beginning of the 20th century.

Imparting management education in the Shivaji University commenced in the late sixties with a provision for very limited years. However, the demand for management and social work education was large and growing continuously. With a view to cater to the needs of this growing demand, Prof. Dr. A. D. Shinde, the renowned chartered accountant and former dean of the faculty of commerce and management, Shivaji university, Kolhapur, established this institute: Chhatrapati Shahu institute of business education and research (Siber) in July 1976 with active support of the chief minister of Maharashtra honourable (late) Shri Vasantao Dada Patil and honourable (late) Shri Shripatraoji Bondre.

VISION:

- To promote equal opportunities in higher education for women student community.
- To educate & prepare girls, student community for vocational & professional excellence to face the need of changing economic condition & business policies of the government.

Mission statements:

- Adopting variety of modern pedagogues.
- Prepare women student academically.
- Facilitate women in understanding, developing interaction and applying core and specialized concepts and practices.
- Update women in a different vocations and professions to face the future challenges of market by providing them laboratory and field practical training.





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Goals:

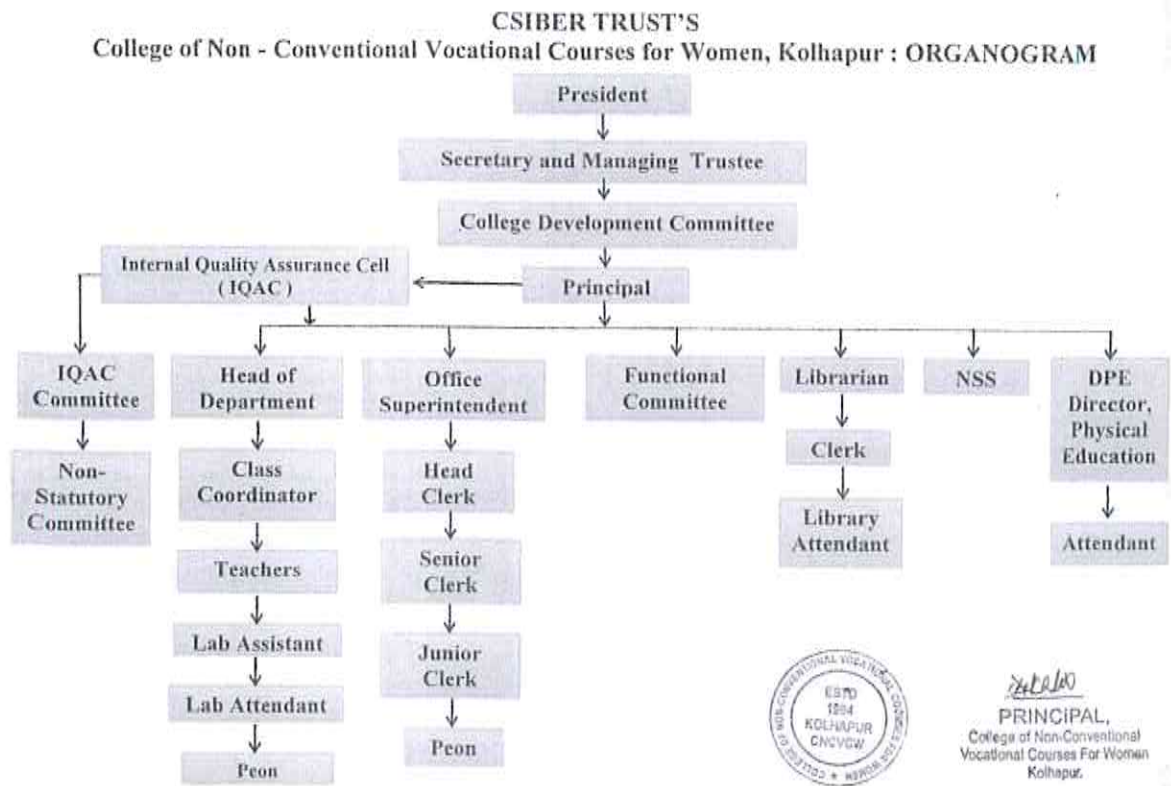
- Promoting sense of belongingness, confidence and fulfil the expectations of women community and society at large.
- Imparting high quality value-based career-oriented education to women students and encouraging to them self-employment.
- Developing a systematic approach in solving the problems at specific and universal context. Encouraging on team spirit and team work.




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• **COLLEGE ORGANOGRAM:**

Organogram of the college is given in below : Figure 1



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COURSE OFFERED BY COLLEGE:


Sr. No.	Programme level	Name of programme
1	Undergraduate	B.Sc. (FTM)
2	Undergraduate	B.A. (DMFC)
3	Undergraduate	BID
4	Undergraduate	B.Com. Bank Management
5	Undergraduate	B.Com. Business Management
6	Undergraduate	B.Sc. Environment Science
7	Undergraduate	B.A. (Multimedia)
8	Post-Graduate Diploma	Post Graduate Diploma in Nutrition and Dietetics
9	Post-Graduate	M.Sc. (Food Science & Nutrition)

NAME AND ADDRESS OF COLLEGE:

Name of college	College of Non-Conventional Vocational Courses for Women Kolhapur
Address	CSIBER campus, Shivaji University Road, Kolhapur. (Maharashtra)
Pin	416004
Website	www.cncvcw.edu.in

Designation	Name	Telephone with STD code	Mobile	Email
Principal	Dr. Anil R. Kulkarni	-	7588470146	principalcncvcw@siberindia.edu.in
Vice Principal	-	-	-	-




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	Pooja S. Sarolkar	-	9075986907	sarolkarpooja07@gmail.com
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	Amarr Mestry	-	9860703327	amarrmestry@gmail.com

Status of the institution:	Non – aided
Type of institution:	
a. By gender	Women's
b. By shift	-
Sources of funding:	Self-Supportive
a. Date of establishment of the college:	1994
b. University to which the college is affiliated:	Shivaji University
c. Details of UGC recognition:	
Under section	
i) 2 (f)	-
ii) 12 (B)	-



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3.1.2. DETAILS OF AREA:

Table no. 1: Location of the campus and area in sq. mts.is given below:

Location	Urban area
Campus area in square	44,345 sq. m

3.1.3 LAND USE PATTERN OF COLLEGE:

Table No.2: Land use pattern of college

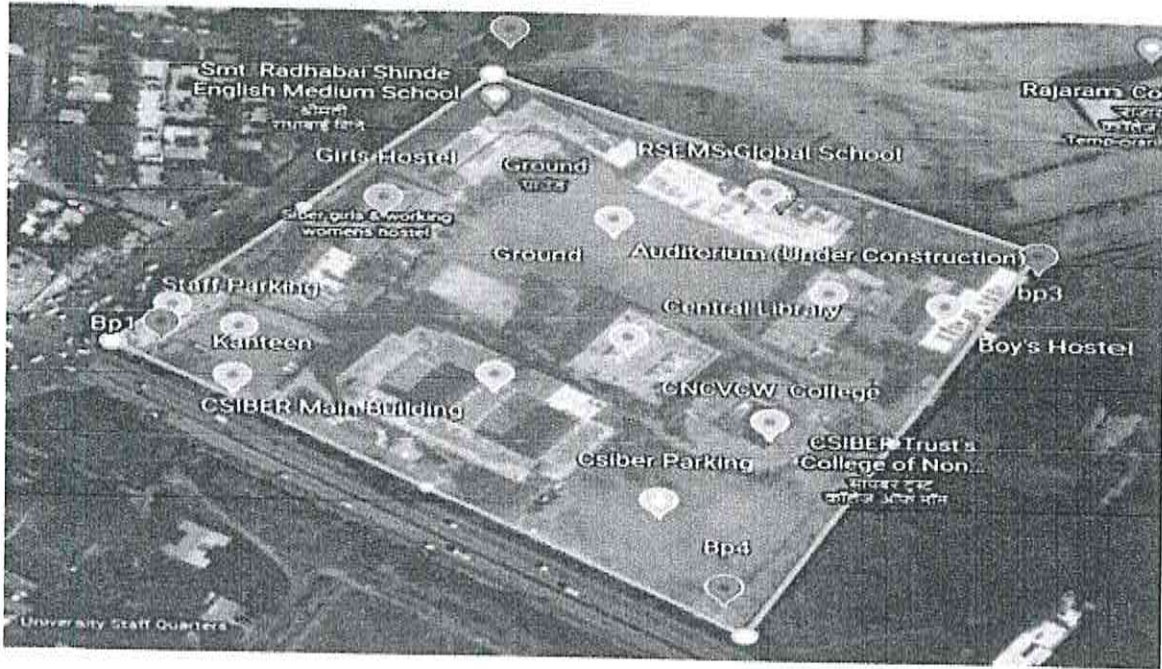
	Area
Total Campus Area	44,345 sq. m
Main building	4300 sq. m
Canteen building	612.0 sq. m
Girl's hostel	583 sq. m
Boy's hostel	736 sq. m
Library building	1725 sq. m
CNCVCW	1813 sq. m
New auditorium	888 sq. m
Global school	1785 sq. m
Old school	1117 sq. m
Parking	3480 sq. m
Open area	27,306 sq. m

Geographical details of the college area

Boundary pillar (BP)	Latitude (N)	Longitude (E)	Elevation (m) MSL
1	16.68	74.25	588.24
2	16.68	74.25	588.24
3	16.68	74.25	588.24
4	16.68	74.25	588.24



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Location of the college area is shown on Google Earth Map (Figure No. 2)

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3.2 SCOPE OF GREEN AUDIT IN TERMS OF ENVIRONMENTAL ASPECTS:

- 3.2.1. Energy Conservation: Energy conservation is the effort made to reduce the consumption of energy by using less of an energy service. This can be achieved either by using energy more efficiently (using less energy for a constant service) or by reducing the amount of service used
- 3.2.2. Use of Renewable Energy: Renewable energy is useful energy that is collected from renewable resources, which are naturally replenished on a human timescale, including carbon neutral sources like sunlight, wind, rain, tides, waves, and geothermal heat.
- 3.2.3 Efforts for Carbon Neutrality: carbon-neutral (or carbon neutrality) is the balance between emitting carbon and absorbing carbon emissions from carbon sinks.
- 3.2.4 Plantation: It is usually large group of plants and especially trees under cultivation
- 3.2.5 Water Management: Water management is the control and movement of water resources to minimize damage to life and property and to maximize efficient beneficial use.
- 3.2.6 Hazardous Waste management: Hazardous waste management involves reducing the number of hazardous substances produced, treating hazardous wastes to reduce their toxicity, and applying sound engineering controls to reduce or eliminate exposures to these wastes.
- 3.2.7 E-Waste Management: E-waste or Waste Electrical and Electronic Equipment are loosely discarded, surplus, obsolete, broken, electrical or electronic devices
- 3.2.8 Quality of water, air and noise: Water quality describes the condition of the water, including chemical, physical, and biological characteristics, usually with respect to its suitability for a particular purpose such as drinking or swimming.




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3.2.1. ENERGY CONSUMPTION: Electricity is used for illuminating the rooms, fans, computers, Laboratory equipment, and pumps and for cooling rooms (AC).

Table No. 3: Number of rooms in the college:

1.	Total number of buildings	1
2.	Total number of rooms:	22
3.	Total number of labs:	5
4.	Girl's hostel:	2
5.	Rector bungalow (girls)	2
6.	Seminar halls	1

ENERGY CONSUMPTION UNITS

Table No. 4: Energy consumption units

	Energy sources	Electricity/generator/solar lamps
a.	No. of PC and laptops	112
b.	No. of tube lights	160
c.	No. of computers	112
e.	No. of UPS	3
f.	No. of fans	150
g.	No. of fridge	2
i.	No. of A.C.	3
j.	No. of LED bulbs	170
k.	Electric pump of 5 HP	2

3.2 ENERGY REQUIREMENT: sanctioned load (20 kw)

Electricity supplied from the Maharashtra State Electricity Board is the main source energy for the activities on the campus. In addition to the regular supply, energy consumed (KW) during the last year is shown in tabular as well as graphical form.



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Table No.: 5 Energy consumption during the Year 2020-21

Consumer No- 266513077467

Sr. No.	Months	Energy Units	Amount
1	January2022	1555	12149
2	February2022	1620	12638
3	March2021	2363	18929
4	April 2021	1677	13067
5	May2021	42	767
6	Jun2021	0	373
7	July2021	0	309
8	August2021	792	6409
9	September2021	513	4310
10	October2021	248	2317
11	November2021	1340	10532
12	December2021	1921	14903
Total		12,008	96,703

Electricity consumption

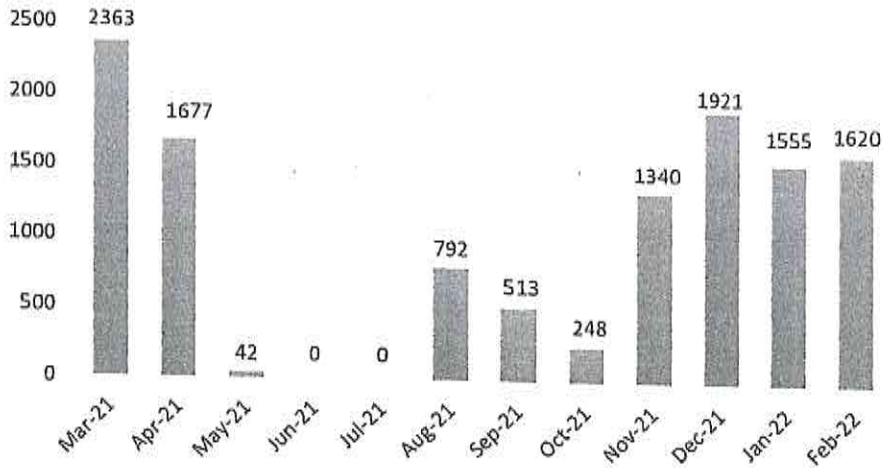


Fig.02: Average Energy Consumption the Year 2020-21

Energy conservation measures taken up by the College:

From the energy consumption pattern, it is found that there was increase of energy consumption in month of December to March as compared other months. Thereafter, energy consumption is gradually decreasing in May to November. Maximum energy requirement was 2363 Units during March and minimum 0 units was in June and July, in energy consumption during the last year is mainly switching over the use of LED bulbs in place high energy consuming 40-Watt tube lights.



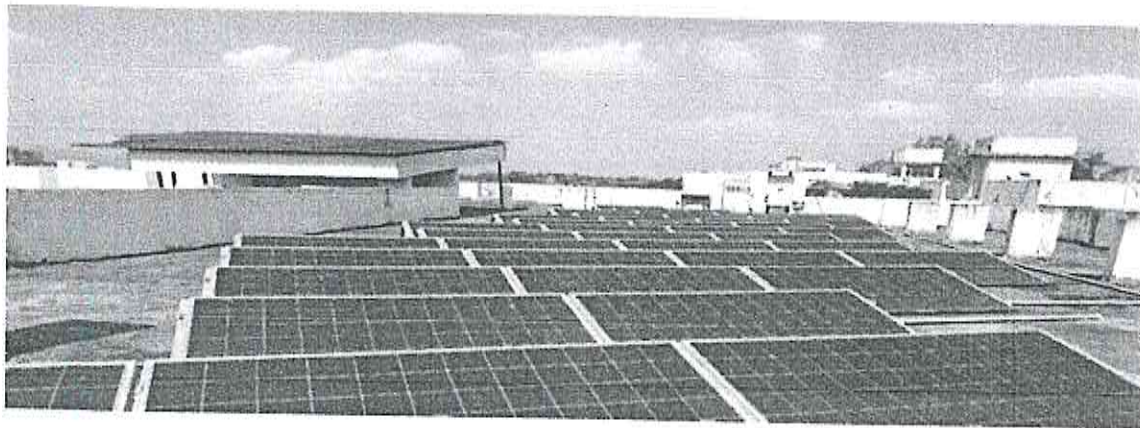
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The requirement is met from the Maharashtra Electricity Board. College is aware of environmental impacts of consumption of conventional energy supplied by MSEB. Hence, college has adopted following measures to minimize the energy consumption.

1. Increased use of Compact Fluorescent Lamp and LED bulbs against incandescent bulbs
2. Increased use of UPS against conventional generator
3. Most of the fans carry three-star rating of electrical appliances.
4. College has encouraged use of SMS/e-mail instead of sending notices and faxing documents.
5. Awareness amongst students was carried out and accordingly sign boards are displayed at strategic locations for conservation of energy and students positively responding.
6. College is using flat-screen LCD monitors rather than CRT monitors.

3.2.2: USE OF RENEWABLE ENERGY:

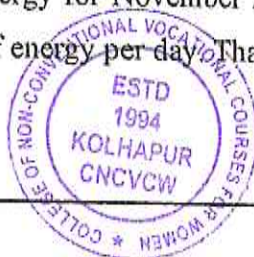
1. **Use of solar system:** Previously, electricity based hot water geysers were used in the hostel which used to consume huge amount of energy. But then these water geysers were replaced by solar water heater.



Solar panel system

Considering the growing energy demand from various sectors our college has decided to go for use of nonconventional energy resources for all its internal consumptions by installing roof top solar panels.

For the last five years, energy usage, our annual requirement is about 16824 units. We have installed 46 numbers of solar panels with the install capacity of 20kw with capital cost of Rs. 547676/- in the month of November 2018. Solar system has given excellent results which have generated 37372 units of solar energy for November 2018 to July 2020. On an average the system generates about 50 units of energy per day. That is about 18000 units per year against



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our requirement of 16825 units. Thus making college self-sufficient to export the surplus energy to national grid.

Generation of solar energy has given number of environmental benefits in terms of offsetting green house gases. Such as solar energy generated is equivalent to creation of 41.6 hectare of forest land, saves 482278 kg of carbon dioxide which reduces pollution made by 6 passenger cars emitting carbon dioxide, over 106.32 hours. Reduction of 236.64 kg of nitrous oxide which is equivalent to requirement of power to 2094 computer for a year. And also reduces 1393 kg of sulphur oxide which equivalent to emission of carbon dioxide by TV over 103005 hours.

3.2.3: Efforts for carbon neutrality:

Thinking about carbon footprints is a simple way of thinking about ways to reduce environmental pollution. By reducing our carbon footprints, each one of us can contribute to making the earth a safer, better place to live.

At CNCVCW College carbon footprint for indoor lighting in office building is considered. The performance of the building by using LCD and LED lights is monitored which reduces the building carbon foot print. The carbon foot print is monitored for –

1. Incandescent Light
2. Compact Fluorescent Light
3. LED Lights

Electricity:

This electricity is produced by natural gas, coal, petroleum and some other renewable resources. Electricity is produced from different sources. The following table shows the quantity of greenhouse gas released from them:




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Table No. 6: Electricity produced from different sources

Source	Million metric tons of CO ₂ emission for 1 year	Electricity generation (Billion kWh) for 1 year
Coal	1788	1882
Petroleum	106	119
Natural gas	337	562
Other	14	22
Non fossil fuels	None	1106
Total	2245	3691

A single kilowatt-hour of electricity will generate 619 grams of CO₂ emissions.

Following sources of light are generally used:

1. Compact Fluorescent Light

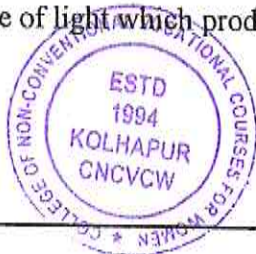
Compact Fluorescent Light produce less heat and more visible light compare than incandescent lamp. We can calculate how much CO₂ will be emitted by 14watt incandescent bulb

- Power Consumption- 14 watts
- Operation per day- 10 hours
- Power Consumption per annum-51100 watt
- Electricity per hour (kwh) – 0.014 (1 kWh=619 g CO₂ can be released)
- Lighting Carbon Emission per year/lamp- (51.1*619g) - 31.6 kg.

A single 14 watts CFL lamp will generate 31.6 kilograms of CO₂ for every year. The reduction of carbon footprint is none for this lamp. CFL contains harmful mercury which creates mercury emission. Estimated suggestion led lights only will reduce our carbon footprint over than other lights.

2. Incandescent Light

Incandescent lamp is a source of light which produce light when the filament is being heated.




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It can release 80% electrical energy converted into heat energy. We can calculate how much CO₂ will be emitted by 40-watt incandescent bulb.

- Power Consumption- 40 watts
- Operation per day- 10 hours
- Power Consumption per annum-146000 watt
- Electricity per hour (kwh) - 0.04 (1 kWh=619g CO₂ can be released)
- Lighting Carbon Emission per year/lamp (146*619g) -90.3 kg.

A single 40 watts incandescent bulb will generate 90.3 kilograms of CO₂ for every year. The reduction of carbon footprint is none for this lamp.

3.LED Lights

LED lights consumes low power and energy efficient over than other lights. Not even a single point we can't compare led lights with other lighting. We can calculate how much CO₂ will be emitted by 8-watt LED lamp -

- Power Consumption- 8 watts
 - Operation per day- 10 hours
 - Power Consumption per annum-29200 watt
 - Electricity per hour (kwh) – 0.008 (1 kWh=619 g CO₂ can be released)
 - Lighting Carbon Emission per year/lamp (29.2 *619g) - 18 kg.

A building's carbon footprint from led lighting can be reduced by 68%.

- Reduction in Carbon Footprint (tons)-0.122(12.28 kg)

The 8-watt LED equivalent will only be responsible 18 kilograms of CO₂ over the same time span.




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Table No. 7: Carbon foot prints

	CFL	Incandescent bulb	LED light
Power Consumption(watt)	14	40	8
Electricity(kwh)	0.014	0.04	8.008
Hours of Operation Per Day	10	10	10
Carbon Emissions (tons) per year/lamp	0.316	0.903	0.18
Reduction in Carbon Footprint (tons) / lamp	-	-	0.12

- LED light can reduce our carbon footprint by 0.12 tonnes per year.
- Led light does not contain mercury; it is a big benefit for this lamp.
- CFL contain 3-5mg per bulb which is poisonous. Mercury emission is 1.2mg from power plant using CFL.
- Incandescent, it is 5.8 mg from power plant.

The 8-watt LED equivalent will only be responsible 18 kilograms of CO₂ over the same time span.

Based on above comparisons, LED emerges as the best option to reduce carbon footprint.

At CNCVCW College, all together there are 20 class rooms with 170 LED

Details of CO₂ emitted from these lights are given in table 8.

Table No. 8: Details of CO₂ emitted due to bulbs

Light	No. of bulbs	CO ₂ emitted per 40 watt lamp / year	Total CO ₂ emitted per year
LED	170	18.0kg	3060kg



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Table No. 9: Total CO₂ emissions:

Light	No. of bulbs	CO ₂ emitted per 40-watt lamp / year	Total CO ₂ emitted per year	Reduction of CO ₂ emission
LED	170	18.0 kg.	3060 kg	12,480kg

- Even after installation of Solar Power Pack system, consumption of energy can be saved, so that surplus energy can be sold.
- Replacement of conventional bulbs has contributed significantly in the reduction of CO₂.
- Further, all the fans should be replaced in phased manner energy efficient three-star rating fans.

3.2.4: Plantation:

The college campus total number of plants as on 2020-21 is about more than 100. Details of plantation with respect to Botanical name, English name and local name is given table no.9

- In order to create awareness among students, plantation is carried out from time to time. The environment department of college is taking continuous efforts to increase the green cover in college campus.
- Plantation consists of different types of shady and flowering trees.
- Ornamental plants are planted in soil pots, which are placed in corridors.
- Proper care of all these plants is taken by gardener.



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Table no. 10 List of plants in college campus

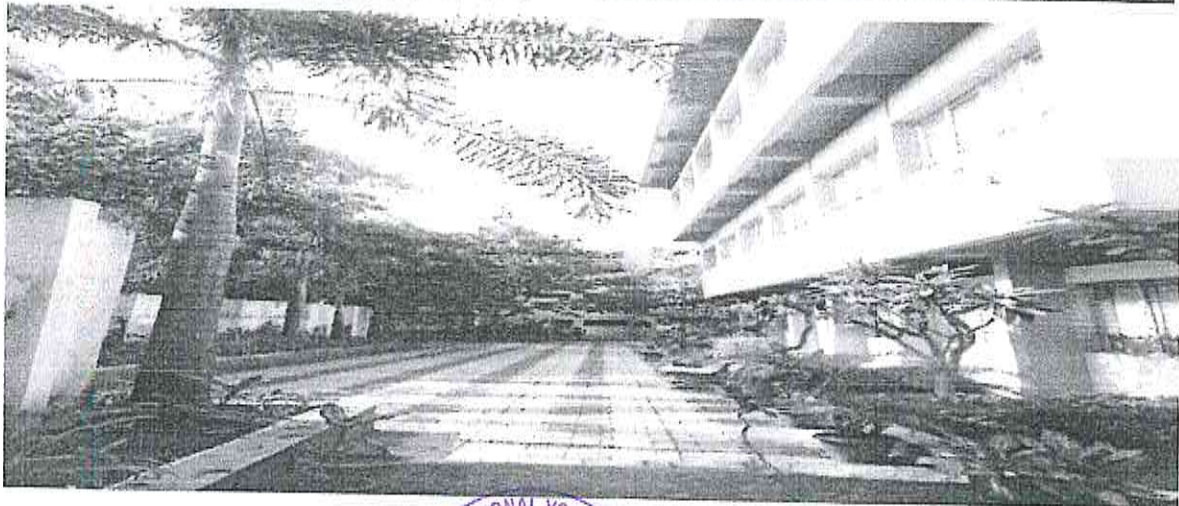
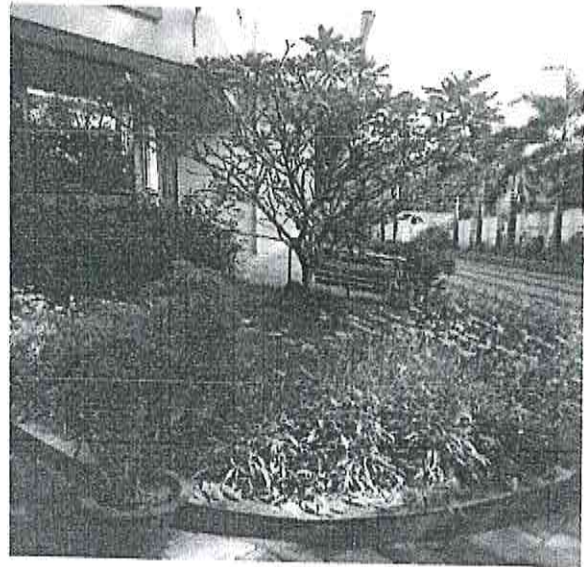
List of plants in CNCVCW Campus

Sr.No.	Botanical Name	Common Name	Family
1	Polysciasfructicosa	Ming Aralia	Araliaceae
2	Tabernaemontanadivaricata	Pinwheelilower	Apocynaceae
3	Ixoracoccinea	Jungle Geranium	Rubiaceae
4	Thaumatophyllum	Tree philodendron	Araceae
5	Dypsislutescens	Areca palm	Arecaceae
6	Rhapisexcelsa	Broadleaf lady palm	Arecaceae
7	Plumeriarubra	Red frangipani	Apocynaceae
8	Codiaeumvariegatum	Garden croton	Euphorbiaceae
9	Kalanchoepinnata	Life plant	crassulaceae
10	Breynia	Snow bush	Phyllanthaceae
11	Excoecariacochinchinensis	Chinese Croton	Euphorbiaceae
12	Dieftulbachia saguine	Dumb cane	Araceae
13	Crinum asiaticum	Poison bulb	Amaryllidaceae
14	Rhodospatha	Sphotayabujhdang	Araceae
15	Durantaerecta	Golden drewdrop	verbenaceae
16	Ixorachinensis	Chinese ixora	Rubiaceae
17	Heliconiapsittacorum	Parakeet flower	Heliconiaceae
18	Cheilocostusspeciosus	Crepe ginger	Costaceae
19	Dracaena reflexa	Song of India	Asparagus
20	Tradescantiazerbrina	Silver inch plant	Commelinaceae
21	Cordyline fruticosa	Ti plant	Asparagaceae
22	Alpinia zerumbet	Shell ginger	Zingiberaceae
23	Bischofiajavanica	Bishop wood	Phyllanthaceae
24	Azardica indica	Neem tree	Meliaceae
25	Ficus benjamina	Weeping fig	Moraceae
26	Premna serratifolia	Arani	Lamiaceae
27	Galphimia glauca	Malpighiaceae	Golden thryallis
28	Polyalthia longifolia	False ashoka	Annonaceae
29	Terminalia catappa	Indian almond	Combretaceae
30	Syngoniumm podophyllum	Goosefoot	Araceae
31	Bucida buceras	Bullet tree	Combretaceae
32	Syzygium cumini	Jamun	Myrtaceae
33	Eucalyptus globulus	Blue gum	Myrtaceae
34	Elymus repens	Couch grass	Poaceae



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Plantation Cover in the Campus



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3.2.5 Water Management:

Details of students admitted to various courses and staff members during 2020-21 is given as below:

Table no. 11: College strength at a glance:

Year	Admission	Teaching Staff	Non-teaching Staff	Total
2020-21	635	33	09	6777

Water Demand Analysis:

Water demand for people on campus for a duration of maximum 7 hrs is calculated at the rate of 10 litres/ person.

Table No.12: Water Demand Analysis

People on campus	Water demand	Total per person per day(lit)	Water for plantation	Total requirement per day(lit)
677	@10 l/d	6270	1000 lit/day	7770

On an average requirement of water per day would be 7770 lit/d. This demand is met through supply of water from a borewell, which can yield water throughout the year.

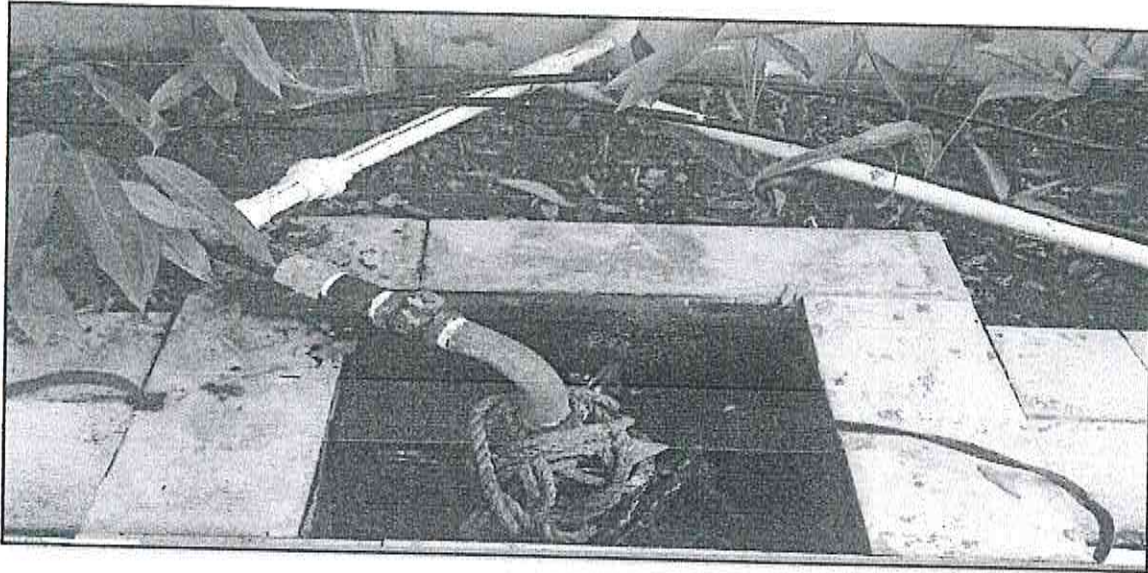
The water demand is fulfilled from two main sources:

Local water supply body:4000lit/day

Bore well: 3270 lit/day



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BORE WELL

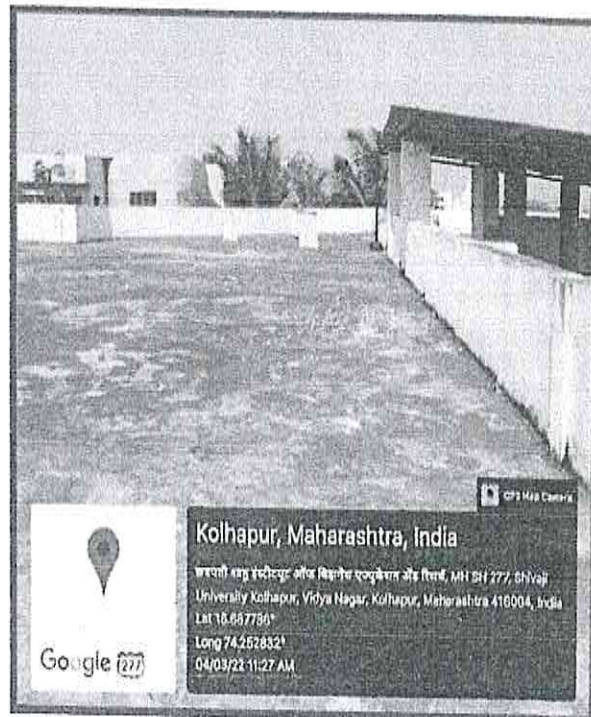
Rain water harvesting:

Rain water collected from the roof of the building is connected through pipeline to the borewell. This recharges existing water table level. Thereby reduces surface runoff and enhances in filtration.

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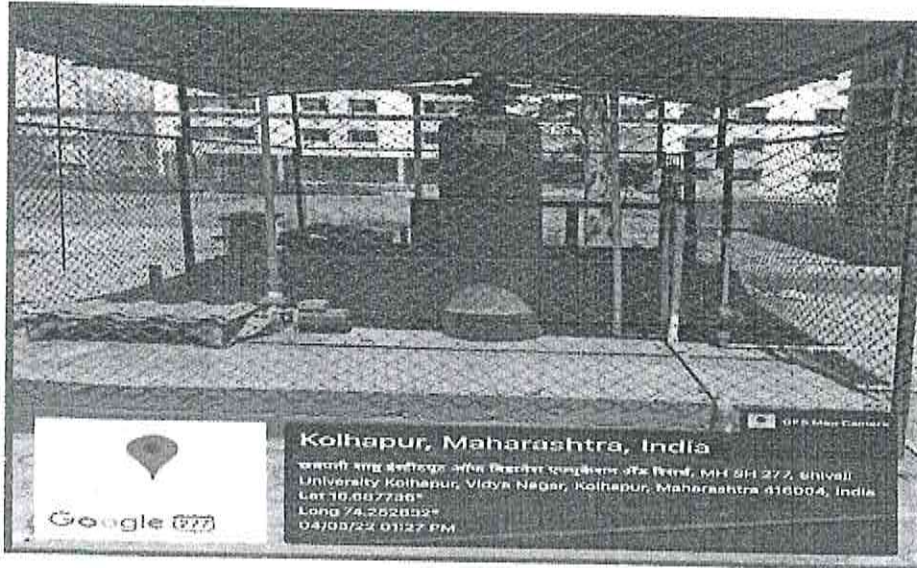
Layout system of the rain water harvesting is shown in following photographs



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Waste water Treatment:

Total water demand for domestic consumption on college campus is 7770 litre/day. By and large, it is assumed that 30 % waste water is generated during college hours i.e., 7770 litre/day $0.3 = 2331$ litre/day. Out of 2331 litres waste water generated, part of this domestic waste water is treated in common STP and part of it is disposed off to septic tank. Water treated through STP is reused for the gardening purpose.

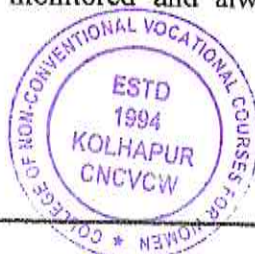



3.2.6: Hazardous waste management:

Hazardous waste management involves reducing the number of hazardous substances produced, treating hazardous wastes to reduce their toxicity, and applying sound engineering controls to reduce or eliminate exposures to these wastes.

Following measures have been taken by college to treat different kind of waste:

- **Laboratory waste:**
 - a) Chemical waste is diluted with water and drained in closed pipes.
 - b) Acids are stored in glass bottles and it is kept in sand.
 - c) The stoppers of the bottles containing chemicals releasing fumes are regularly monitored and always kept closed to avoid any kind of leakage.




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3.2.7 Solid Waste Management:

As a policy matter College has banned usage plastic bags on the campus. College has taken precautions to collect solid waste through dust bins .The dustbins are helpful to maintain clean atmosphere sanitation of college campus. Dustbins are placed on various places. Two big dustbins are on the college ground. Each classroom carries one dustbin. The main aim of using dustbins is to clean the campus, to collect waste material and to create awareness of cleanliness among the students.

Solid waste collected is segregated into degradable and non-degradable

Table No. 13: List of Dustbins

Sr. No.	Place	No. of Dustbins
1	College Ground	02
2	Class Rooms	22
3	Laboratory	04
4	Staff rooms	04
5	Library	01
6	Administrative office	01
Total		34

- **Other measures for waste reduction:**
 - a) College tries to avoid use of non-biodegradable products like plastic plates, cups and glasses in the canteen.
 - b) Students are instructed to avoid use of plastic materials.
 - c) Dustbins are placed everywhere in college campus to ensure proper disposal of solid waste.
 - d) Biodegradable and non-biodegradable wastes are segregated properly.
 - e) Reusable glasses and plates are used in college canteen.




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Other measures taken by college for environmental conservation:

Table no. 14: Measures taken by college for environmental conservation

Sr. No.	Name of activity	Date	Beneficiaries	Outcome
1.	Identification of Plants in College Campus	11-11-2021	Department of Environment Science	To Identify the plants in campus
2.	Celebration of National Pollution Prevention Day	02-12-2021	Department of Environment Science	To create awareness regarding pollution control
3.	Celebration of World Soil Day	06-12-2021	Department of Environment Science	To create the awareness related to importance of the soil to the environment.
4.	Lead college workshop on sustainable development and renewable energy	04-01-2022	All Departments	Information about sustainable goals, future needs, current issues regarding energy and their alternatives
5.	Eco-friendly colour making workshop	12-03-2022 to 15-03-2022	Department of Environment Science	To prepare safe and environmentally friendly colours
6.	Poste presentation and model making competition under mazi Vasundhara scheme	22-03-2022	All Departments	To create awareness and solutions of air pollution




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COLLEGE OF NON-CONVENTIONAL VOCATIONAL COURSES FOR WOMEN

Affiliated to Shivaji University, Kolhapur, Maharashtra, India

University Road, Kolhapur - 416 004

Accredited by NAAC with B Grade (3rd Cycle)

Dr. R. A. SHINDE
Secretary & Managing Trustee

Ref. No: CNCVCW/2021-22/

Date: 11/03/2021

Air Monitoring Report

Name of the Party : College of Non-Conventional Vocational courses for women,
University road, Kolhapur 416 004

Monitoring Station : CSIBER campus

Date of Monitoring : 09-03-2021

Monitoring Period : 8:00 am to 8:00 pm

Instrument used : Repairable dust sampler (Envirotech APM 460BL)

Monitoring type/ purpose: Ambient Air Monitoring

Sr. No.	Parameter	Value	CPCB standards (24 hrs.)
1.	Suspended particulate matter (SPM)	64.50	100
2.	Respirable Particulate matter (RSPM)	24.86	50
3.	Oxides of Nitrogen (NO _x)	19.46	30
4.	Sulphur Dioxide (SO ₂)	5.02	30

Note: All values are in $\mu\text{g}/\text{m}^3$

Monitoring carried out by

Ms. Pooja S. Sarolakar

Checked by

Ms. Sayali A. Chavan



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Dr. R. A. SHINDE
Secretary & Managing Trustee

Ref. No: CNCVCW/2021-22/

Date: 11/03/2021

Noise Monitoring Report

Name of the Party : College of Non-Conventional Vocational courses for women,
University road, Kolhapur 416 004

Monitoring Station : CSIBER campus

Date of Monitoring : 10-03-2021

Monitoring Period : 8:00 am to 8:00 pm

Instrument used : Sound Level Meter (SLM 100)

Monitoring type/ purpose: Ambient Noise Monitoring

Sr. No.	Parameter	Noise in dB(A)
1	Staff room	50.3
2	Administrative office	55.4
3	IQAC	42.7
4	Corridors	54.3
5	Reading room	45.3
6	Library	46.5
7	Class room (outside)	48.5
8	Class room (inside)	45.6
9	Open Space (stage)	50.7
10	Campus	58.2
11	Entrance (Near gate)	62.2
12	Near Boys Hostel	50.9
13	Near RSEM School	45.8

Note: Weighted average of 8 hrs monitoring

Monitoring carried out by

Pooja

Ms. Pooja S. Sarolkar

Checked by

Sayali

Ms. Sayali A. Chavan



Sayali
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Accredited by NAAC with B Grade (3rd Cycle)

Dr. R. A. SHINDE
Secretary & Managing Trustee

Ref. No: CNCVCW/2021-22/

Date: 11/03/2021

WATER ANALYSIS REPORT

Name of the party: College of vocational and nov vocational courses of women, Kolhapur

Nature of sample: Bore well water

Sample analyzed on: 10/03/2021

Sr.No.	Parameter	Value	Highest desirable Limit	Maximum Permissible Limit
1	pH	7.8	7.0-8.5	6.5-9.2
2	Total Hardness	151.59	100	500
3	Calcium	45.10	75	-
4	Magnesium	10	50	150
5	Chloride	25	200	600
6	MPN/100ml	10	00	10
7	Sodium	5	20	-
8	Potassium	4	10	-

NOTE: All values unless otherwise stated are in mg/l ; except pH.

MPN: Most Probable Number of coliform bacteria.

REMARK: Water is suitable for domestic use.

Analysed by

A. Raut

(Ms. Anagha A. Raut)

Checked by

S. Chavan

(Ms. Sayali A. Chavan)



S. Chavan
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4.0: Suggestions for improvement:

CNCVCW College has already taken various measures for creating environmental awareness among students and staff. Along with these efforts, some more measures can be taken for further improvement in environmental condition:

1. Plant medicinal trees.
2. Biodegradable waste should be used for composting.
3. All the fans should be replaced in phased manner energy efficient five-star rating fans.
4. It is also suggested to use solar energy as an alternate of energy for street light
5. Observing no vehicle day at regular interval which can be decided in consultation and participation of students.

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Ref. No. Eco-Life/2021-22/ 01

Date: 10/10/2022

Certificate

This is to certify that Green Initiative Report for the academic year 2021-22 of the "College of Non-Conventional Vocational Courses for Women (CNCVCW), Kolhapur " has been prepared by us based on the document submitted by College of Non-Conventional Vocational Courses for Women (CNCVCW), Kolhapur.

Prepared and Certified by

For Eco-Life

Proprietor

Lead Auditor
EMS (ISO 14001: 2015)
International Register of
Certificated Auditor (CQI-IRCA)
Certificated No 22/IN/1023876/808R

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CSIBER TRUST'S
College of Non-Conventional
Vocational Courses for Women
(CNCVCW)
GREEN INITIATIVE REPORT

2021-22



Mr. Pritam Patil
Environmental Auditor
Eco-life Environmental Consultancy and Eco-Businesses, Kolhapur
October, 2022



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INDEX

Sr. No.	Description	Page No.
1	Preamble	4
2	Green Policy of College	6
3	The scope of green audit	7
3.1	Details of college campus	7
3.1.1	College profile	7
3.1.2	Details of area	12
3.1.3	Land use pattern	12
3.2	Environmental aspects	14
3.2.1	Use of renewable energy	14
3.2.2	Plantation	15
3.2.3	Water management	18
3.3	Green initiatives	20
4.0	Suggestion	21



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LIST OF TABLES

Table No.	Description	Page No.
1	Details of area	12
2	Land use pattern of college	12
3	Plants in college campus	16
4	Green initiatives taken by college	20

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GREEN INITIATIVE REPORT

1.0: PREAMBLE:

The survival of human race depends upon the surrounding environment. Various environmental factors play critical role in well-being of all living organisms on earth. But in this era of industrialization, we are mainly focussing upon development and economic prosperity and very less attention is provided towards environment. We are continuously over-exploiting the natural resources to raise our standard of living, which in turn leads to environmental degradation. Human activities have led to various kinds of pollution such as air pollution, water pollution, soil pollution etc. This polluted environment leads to the adverse impacts on health of animals, plants and human beings. Along with different kinds of pollution which are faced at local or regional level, we are also facing global issues such as ozone layer depletion and global warming. Now all these things have resulted into increasing world-wide concern about environmental issues.

India is a developing country, which is facing the problem of population explosion. So, there is a burden on available natural resources. This population explosion has resulted in conversion of forest lands for agricultural or residential purpose. It has helped in improving the lifestyle but on the other side it is exploiting the environment. Deforestation has led to destruction of natural habitats of animals. It has caused extinction of many plants as well as animals.

Along with this, we are also facing the issue of solid waste management. It has led to soil pollution and groundwater pollution. Areas near cities are often used as solid waste dumping site. People living nearby these areas are facing various health problems and the waste dumping sites can also catch fire sometimes. Industries, commercial areas and residential areas are contributing to the noise pollution as well.

All these anthropogenic activities have caused profound impact on rural areas, urban areas, oceans and forest lands. This indiscriminate development is against principle of sustainable development. After 1970, impacts of these activities were taken into consideration and various conferences were held at international level and many conventions were signed. But still, the problem of environmental degradation is continuously increasing. Therefore, now there is a need of focussing on environment friendly technology. At the same time, we have to reduce the waste generation and switch to reuse and recycling. We should try for sustainable development which will foster the socio-economic prosperity and will secure the life of future



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generations. For this, efforts should be taken at individual, institutional, national and international level.

GREEN INITIATIVE:

The green initiative was first conducted in the United State of America in 1970s. By 1992, approximately half of the local authorities of UK undertook the green audit completely or partially. The United Nations Conference on Environment and Development (UNCED), which was held at Rio de Janeiro, motivated all the countries to act cautiously to save the earth with sustainable approach. Most of the countries have accepted their national strategy for sustainable development which includes the policy and programmes aimed to promote geo-biodiversity and protect environment. This Rio spirit shows significant progress in most of the countries and they have changed and upgraded the environmental situation to the possible extent. Some of the Asian countries were also motivated from the summit and played same role within their limits. India is the first country in the world to make environmental audit compulsory. According to gazette notification, all Industries were communicated to submit the reports of the environmental audit to their concerned State Pollution Board, giving details of water, raw materials and energy resources used and products and waste generated by them in their operations from 1992.

Green initiative is a tool to protect the environment by adopting concept of conservation of natural resources.

Sustainable use can be ensured by auditing the use of ecological components. The initiative is known as regular and systematic review and appraisal of the factors and forces that contributes to realization of objectives.



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2.0 GREEN POLICY OF COLLEGE:

“Green campus, Clean campus”

Environmental mission:

1. Creating awareness among students and teachers in terms of plastic free campus, energy conservation, rain water harvesting and environmental and social outreach programmes.
2. College seeks to reduce consumption of resources, reuse where ever possible and recycle the same.
3. Implementation of proper principles of solid waste management and reduction of environmental pollution.
4. Ensure staff and students receive appropriate environmental awareness training


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3.0 THE SCOPE OF THE GREEN INITIATIVE IS DEFINED IN TERMS OF:

- 3.1. Geographical Location of the College Campus
- 3.2. Its Environmental Aspects.

3.1.1. COLLEGE PROFILE:

The institute has been named after Rajashree Shahu Maharaj of Kolhapur, who was known for love and affection for the lowest and loneliest of his subjects. He was instrumental in spreading education and message of equality amongst the people in the beginning of the 20th century.

Imparting management education in the Shivaji University commenced in the late sixties with a provision for very limited years. However, the demand for management and social work education was large and growing continuously. With a view to cater to the needs of this growing demand, Prof. Dr. A. D. Shinde, the renowned chartered accountant and former dean of the faculty of commerce and management, Shivaji university, Kolhapur, established this institute: Chhatrapati Shahu institute of business education and research (CSIBER) in July 1976 with active support of the chief minister of Maharashtra honourable (late) Shri Vasanttraodada Patil and honourable (late) Shri Shripatraoji Bondre.

VISION:

- To promote equal opportunities in higher education for women student community.
- To educate & prepare girls, student community for vocational & professional excellence to face the need of changing economic condition & business policies of the government.

Mission statements:

- Adopting variety of modern pedagogues.
- Prepare women student academically.
- Facilitate women in understanding, developing interaction and applying core and specialized concepts and practices.



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- Update women in a different vocations and professions to face the future challenges of market by providing them laboratory and field practical training.

Goals:

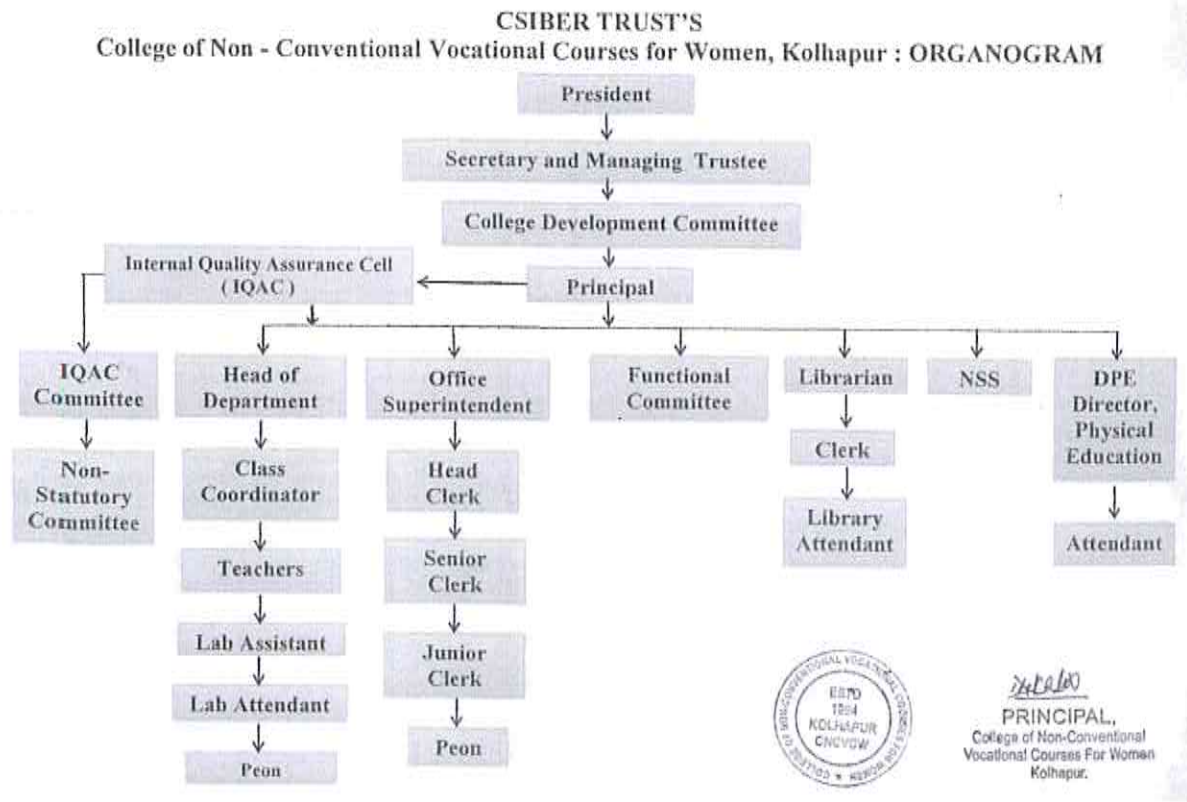
- Promoting sense of belongingness, confidence and fulfil the expectations of women community and society at large.
- Imparting high quality value-based career-oriented education to women students and encouraging to them self-employment.
- Developing a systematic approach in solving the problems at specific and universal context. Encouraging on team spirit and team work.

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• **COLLEGE ORGANOGRAM:**

Organogram of the college is given in below : Figure 1



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COURSE OFFERED BY COLLEGE:

Sr. No.	Programme level	Name of programme
1	Undergraduate	B.Sc. (FTM)
2	Undergraduate	B.A. (DMFC)
3	Undergraduate	BID
4	Undergraduate	B.Com. Bank Management
5	Undergraduate	B.Com. Business Management
6	Undergraduate	B.Sc. Environment Science
7	Undergraduate	B.A. (Multimedia)
8	Post-Graduate Diploma	Post Graduate Diploma in Nutrition and Dietetics
9	Post-Graduate	M.Sc. (Food Science & Nutrition)

NAME AND ADDRESS OF COLLEGE:

Name of college	College of Non-Conventional Vocational Courses for Women Kolhapur
Address	CSIBER campus, Shivaji University Road, Kolhapur. (Maharashtra)
Pin	416004
Website	www.cncvcw.edu.in

Designation	Name	Telephone with STD code	Mobile	Email
Principal	Dr. Anil R. Kulkarni	-	7588470146	principalcncvcw@siberindia.edu.in
Vice Principal	-	-	-	-
	Pooja S. Sarolkar	-	9075986907	sarolkarpooja07@gmail.com
	Anagha A. Raut	-	7875931852	anagharaut81@gmail.com
	Amarr Mestry	-	9860703327	amarrmestry@gmail.com



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Status of the institution:	Non – aided
Type of institution:	
a. By gender	Women's
b. By shift	-
Sources of funding:	Self-Supportive
a. Date of establishment of the college:	1994
b. University to which the college is affiliated:	Shivaji University
c. Details of UGC recognition:	
Under section	
i) 2 (f)	-
ii) 12 (B)	-

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3.1.2. DETAILS OF AREA:

Table no. 1: Location of the campus and area in sq. mts.is given below:

Location	Urban area
Campus area in square	44,345 sq. m

3.1.3 LAND USE PATTERN OF COLLEGE:

Table No.2: Land use pattern of college

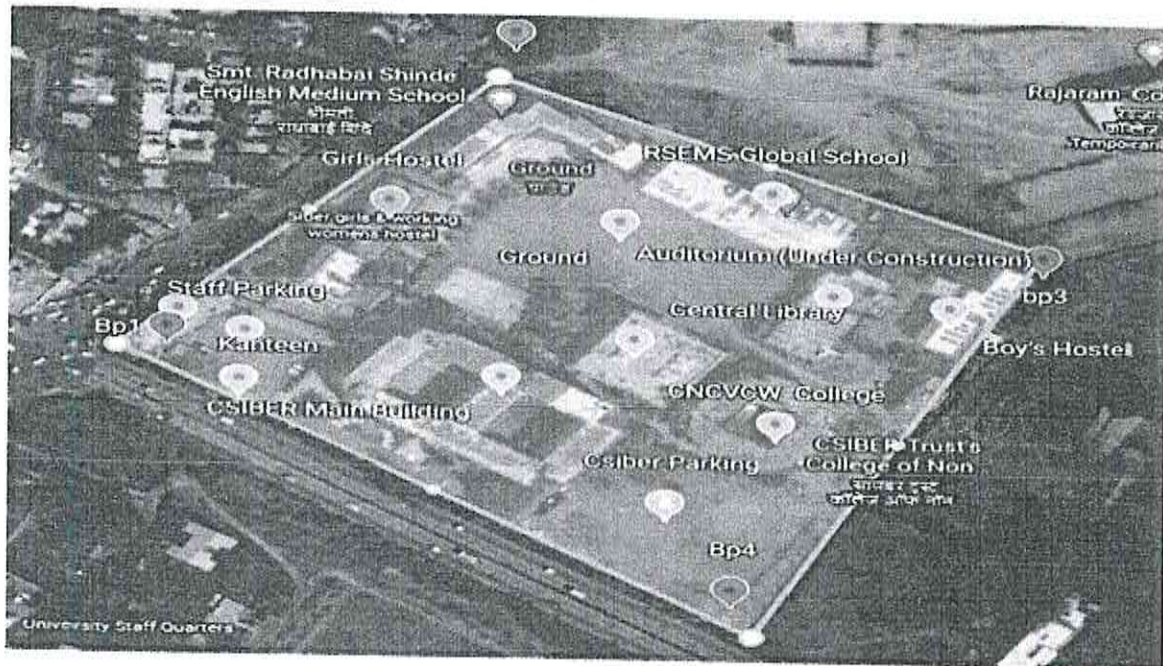
	Area
Total Campus Area	44,345 sq. m
Main building	4300 sq. m
Canteen building	612.0 sq. m
Girl's hostel	583 sq. m
Boy's hostel	736 sq. m
Library building	1725 sq. m
CNCVCW	1813 sq. m
New auditorium	888 sq. m
Global school	1785 sq. m
Old school	1117 sq. m
Parking	3480 sq. m
Open area	27,306 sq. m



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Geographical details of the college area

Boundary pillar (BP)	Latitude (N)	Longitude (E)	Elevation (m) MSL
1	16.68	74.25	588.24
2	16.68	74.25	588.24
3	16.68	74.25	588.24
4	16.68	74.25	588.24



Location of the college area is shown on Google Earth Map (Figure No. 2)



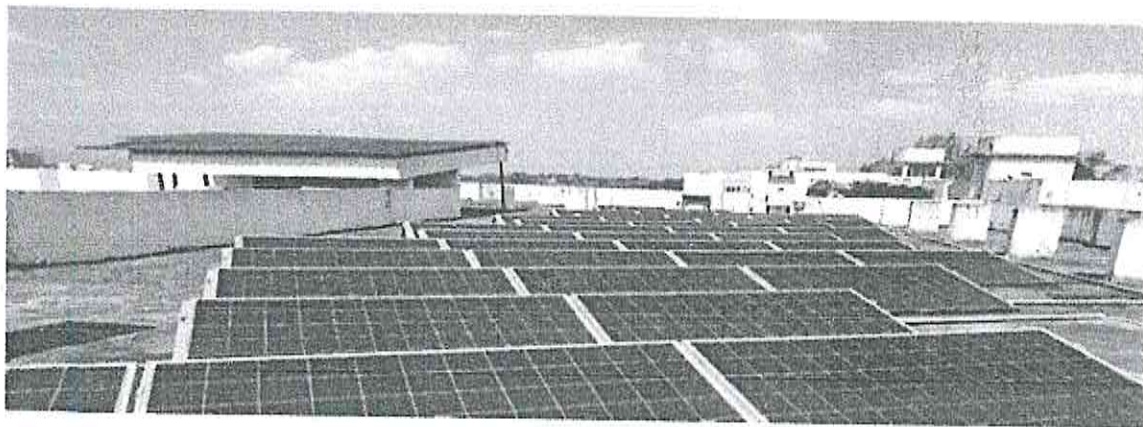
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3.2 SCOPE OF GREEN AUDIT IN TERMS OF ENVIRONMENTAL ASPECTS:

- 3.2.1. Use of Renewable Energy: Renewable energy is useful energy that is collected from renewable resources, which are naturally replenished on a human timescale, including carbon neutral sources like sunlight, wind, rain, tides, waves, and geothermal heat.
- 3.2.3 Plantation: It is usually large group of plants and especially trees under cultivation
- 3.2.4 Water Management through Rain Water Harvesting.

3.2.1: USE OF RENEWABLE ENERGY:

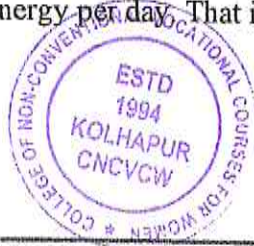
1. Use of solar system: Previously, electricity based hot water geysers were used in the hostel which used to consume huge amount of energy. But then these waters geysers were replaced by solar water heater.

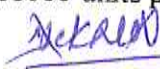


Solar panel system

Considering the growing energy demand from various sectors our college has decided to go for use of nonconventional energy resources for all its internal consumptions by installing roof top solar panels.

For the last five years, energy usage, our annual requirement is about 16824 units. We have installed 46 numbers of solar panels with the install capacity of 20kw with capital cost of Rs. 547676/- in the month of November 2018. Solar system has given excellent results which have generated 37372 units of solar energy for November 2018 to July 2020. On an average the system generates about 50 units of energy per day. That is about 18000 units per year against




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our requirement of 16825 units. Thus making college self-sufficient to export the surplus energy to national grid.

Generation of solar energy has given number of environmental benefits in terms of offsetting green house gases. Such as solar energy generated is equivalent to creation of 41.6 hectare of forest land, saves 482278 kg of carbon dioxide which reduces pollution made by 6 passenger cars emitting carbon dioxide, over 106.32 hours. Reduction of 236.64 kg of nitrous oxide which is equivalent to requirement of power to 2094 computer for a year. And also reduces 1393 kg of sulphur oxide which equivalent to emission of carbon dioxide by TV over 103005 hours.

3.2.2: Plantation:

The college campus total number of plants as on 2020-21 is about more than 100. Details of plantation with respect to Botanical name, English name and local name is given table no.9

- In order to create awareness among students, plantation is carried out from time to time. The environment department of college is taking continuous efforts to increase the green cover in college campus.
- Plantation consists of different types of shady and flowering trees.
- Ornamental plants are planted in soil pots, which are placed in corridors.
- Proper care of all these plants is taken by gardener.



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Table no. 3 List of plants in college campus

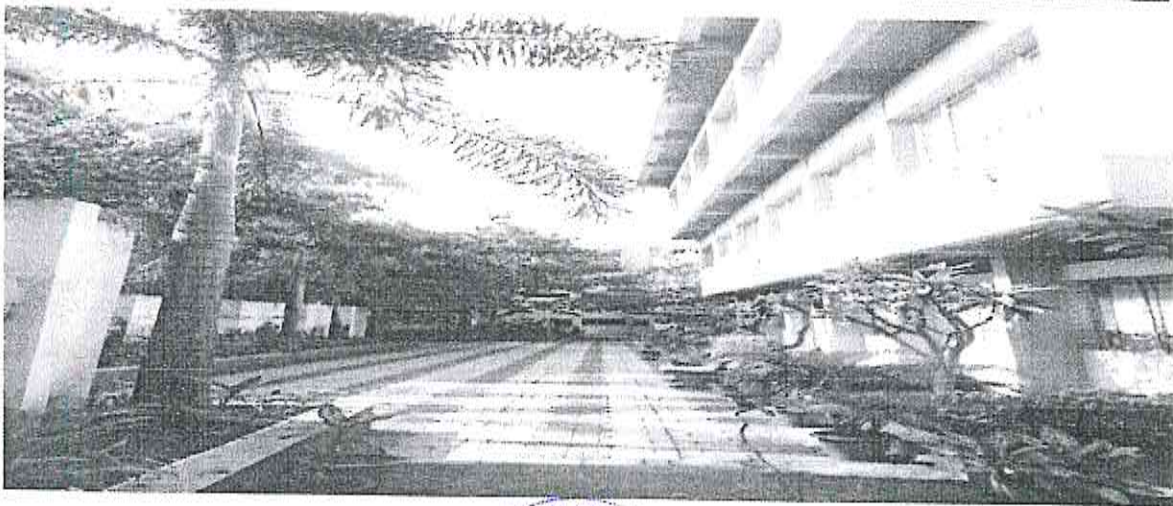
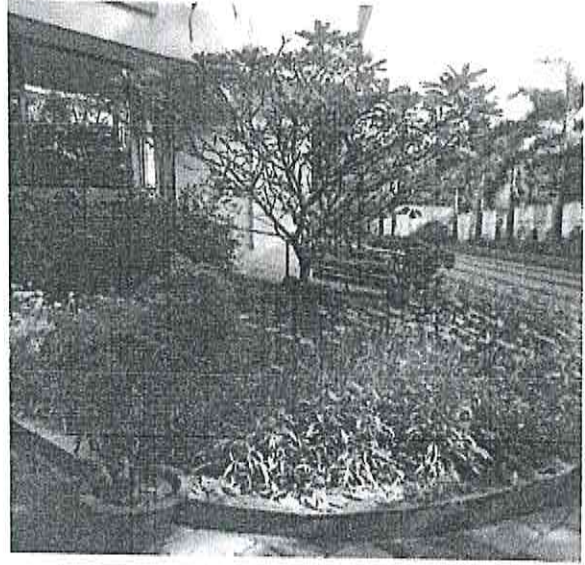
List of plants in CNCVCW Campus

Sr.No.	Botanical Name	Common Name	Family
1	Polysciasfructicosa	Ming Aralia	Araliaceae
2	Tabernaemontanadivaricata	Pinwheelilower	Apocynaceae
3	Ixoracoccinea	Jungle Geranium	Rubiaceae
4	Thaumatophyllum	Tree philodendron	Araceae
5	Dypsislutescens	Areca palm	Arecaceae
6	Rhapisexcelsa	Broadleaf lady palm	Arecaceae
7	Plumeriarubra	Red frangipani	Apocynaceae
8	Codiaeumvariegatum	Garden croton	Euphorbiaceae
9	Kalanchoepinnata	Life plant	crassulaceae
10	Breynia	Snow bush	Phyllanthaceae
11	Excoecariacochinchinensis	Chinese Croton	Euphorbiaceae
12	Dieftulbachia saguine	Dumb cane	Araceae
13	Crinum asiaticum	Poison bulb	Amaryllidaceae
14	Rhodospatha	Sphotayabujhdang	Araceae
15	Durantaerecta	Golden drewdrop	verbenaceae
16	Ixorachinensis	Chinese ixora	Rubiaceae
17	Heliconiapsittacorum	Parakeet flower	Heliconiaceae
18	Cheilocostusspeciosus	Crepe ginger	Costaceae
19	Dracaena reflexa	Song of India	Asparagus
20	Tradescantiazerbrina	Silver inch plant	Commelinaceae
21	Cordyline fruticosa	Ti plant	Asparagaceae
22	Alpinia zerumbet	Shell ginger	Zingiberaceae
23	Bischofiajavanica	Bishop wood	Phyllanthaceae
24	Azardica indica	Neem tree	Meliaceae
25	Ficus benjamina	Weeping fig	Moraceae
26	Premna serratifolia	Arani	Lamiaceae
27	Galphimia glauca	Malpighiaceae	Golden thryallis
28	Polyaithia longifolia	False ashoka	Annonaceae
29	Terminalia catappa	Indian almond	Combretaceae
30	Syngoniumm podophyllum	Goosefoot	Araceae
31	Bucida buceras	Bullet tree	Combretaceae
32	Syzygium cumini	Jamun	Myrtaceae
33	Eucalyptus globulus	Blue gum	Myrtaceae
34	Elymus repens	Couch grass	Poaceae



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Plantation Cover in the Campus



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3.2.3 Rain water harvesting:

Considering the average annual rainfall of about 900mm, it is quite possible to harvest about 9,000 lit of water per day during the effective rainfall days of the rainy season. This is more than the water requirement per day.

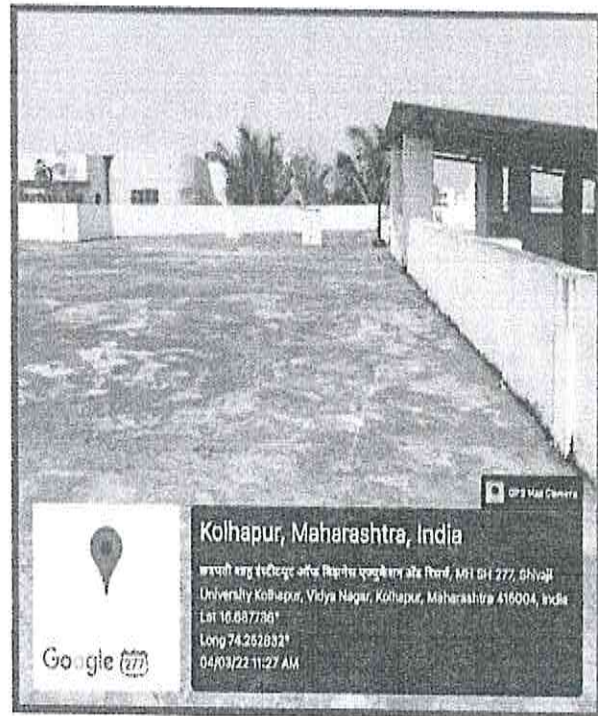
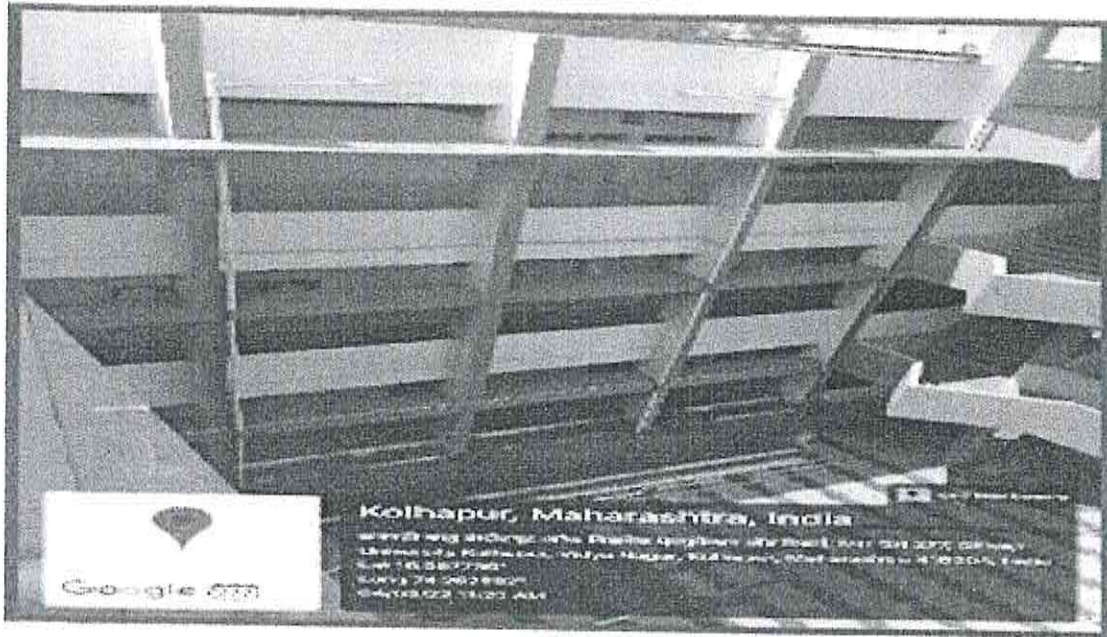
Rain water collected from the roof of the building is connected through pipeline to the borewell. This recharges existing water table level. Thereby reduces surface runoff and enhances in filtration.

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Layout system of the rain water harvesting is shown in following photographs




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4.0: Suggestions for improvement:

CNCVCW College has already taken various measures for creating environmental awareness among students and staff. Along with these efforts, some more measures can be taken for further improvement in environmental condition:

1. Plant medicinal trees.
2. Representative plant species be appropriately labelled with botanical name/English name/local name
3. Biodegradable waste should be used for composting.
4. No vehicle day should be observed at least two times a month.




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**Eco-Life Environmental
Consultancy &
Eco-businesses**



At-Post, Honyali, Tal. Ajara, Dist. Kolhapur
9075986907, 7875931852, 9049488290
Email: info.ecolife1215@gmail.com

Ref. No. Eco-Life/2021-22/ 3\

Date: 10/10/2022

Certificate

This is to certify that Energy Audit Report for the academic year 2021-22 of the “College of Non-Conventional Vocational Courses for Women (CNCVCW), Kolhapur ” has been prepared by us based on the document submitted by College of Non-Conventional Vocational Courses for Women (CNCVCW), Kolhapur.

Prepared and Certified by

For Eco-Life

R. Patil

Proprietor

Lead Auditor

EMS (ISO 14001: 2015)

International Register of

Certificated Auditor (CQI-IRCA)

Certificated No 22/11/10238 16 43

[Signature]

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CSIBER TRUST'S
College of Non-Conventional Vocational
Courses for Women (CNCVCW)
ENERGY AUDIT REPORT

2021-22



Prepared By

Mr. Pritam Patil

Environmental Auditor

Eco-life Environmental Consultancy and Eco-Businesses, Kolhapur

October, 2022



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INDEX

Sr. No.	Description	Page No.
1	Preamble	4
2	College profile	4
3	Energy Policy	6
3.1	Energy consumption	9
3.2	Energy consumption units	10
3.3	Energy requirements	10
3.4	Use of renewable energy	12
3.5	Electricity	13
4.0	Suggestions	17

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LIST OF TABLES

Table No.	Description	Page No.
1	Number of rooms in college	9
2	Energy consumption unit	10
3	Month wise Energy consumption	11
4	Electricity produced from different sources	13
5	Carbon foot print	15
6	Details of Carbon dioxide emitted due to bulbs	16
7	Total Carbon dioxide emission	16




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ENERGY AUDIT REPORT

1: PREAMBLE:

Energy sector has played a very important role in development of human race. Various forms of energy are used in industrial as well as domestic sector. Energy resources can be divided mainly into two types i.e., renewable resources and non-renewable resources. The renewable resources of energy mainly include solar energy, wind energy, water energy etc. The non-renewable resources include coal, petroleum, natural gas etc.

Now-a-days, 90 percent of our energy needs are fulfilled by non-renewable resources, which has led to increase in environmental pollution level. The burning of coal leads to release of Sulphur dioxide, which in turn causes acid rain. The carbon dioxide release from various industrial activities has caused significant increase in the level of greenhouse gases, which is main cause of global warming. Along with this, various other major and minor pollutants are environment friendly. More use of renewable energy resources ensures sustainability.

The energy audit mainly focuses on evaluating the use of energy in institutions generated through renewable and non-renewable means of energy and promoting the use of renewable resources for environmental sustainability.

2. COLLEGE PROFILE:

The institute has been named after Rajashree Shahu Maharaj of Kolhapur, who was known for love and affection for the lowest and loneliest of his subjects. He was instrumental in spreading education and message of equality amongst the people in the beginning of the 20th century.

Imparting management education in the Shivaji University commenced in the late sixties with a provision for very limited years. However, the demand for management and social work education was large and growing continuously. With a view to cater to the needs of this growing demand, Prof. Dr. A. D. Shinde, the renowned chartered accountant and former dean of the faculty of commerce and management, Shivaji university, Kolhapur, established this institute: Chhatrapati Shahu institute of business education and research (Siber) in July 1976




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with active support of the chief minister of Maharashtra honourable (late) Shri Vasantao Chada Patil and honourable (late) Shri Shripatraoji Bondre.

Vision:

- To promote equal opportunities in higher education for women student community .
- To educate & prepare girls, student community for vocational & professional excellence to face the need of changing economic condition & business policies of the government.

Mission statements:

- Adopting variety of modern pedagogues.
- Prepare women student academically.
- Facilitate women in understanding, developing interaction and applying core and specialized concepts and practices.
- Update women in a different vocations and professions to face the future challenges of market by providing them laboratory and field practical training.

Goals:

- Promoting sense of belongingness, confidence and fulfil the expectations of women community and society at large.
- Imparting high quality value-based career-oriented education to women students and encouraging to them self-employment.
- Developing a systematic approach in solving the problems at specific and universal context. Encouraging on team spirit and team work




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3. Energy Policy:

A key component of the College Sustainability Program is energy conservation. Listed below are several guidelines that are intended to manage and reduce energy consumption on all college campus. These guidelines should be followed by all faculty, staff, administration, and students. The Energy usage Policy of college is to manage energy in such a systematic way to minimize its impact on the environment. It will help us to embed efficiency and environmental awareness into our everyday activities, thus helping us to realize our responsibilities and commitment to conservation of natural resources and to limit its usage.

Policies:

- To assess source energy usage and measure its impact on the environment.
- To install photovoltaic solar panels for the generation of alternate energy.
- To install LED bulbs in the whole campus to save energy.
- To develop systematic waste management mechanism.
- To develop rainwater harvesting unit.
- To undertake tree plantation drive.
- To monitor and respond to emerging environmental and energy issues. To strengthen our employees' and students' environmental knowledge and skills to improve our own environmental performance.

Occupant Responsibilities:

- Turn off lights when leaving a room.
- Turn off computer at the end of the day.
- Keep copiers, printers, & fax machines on standby when not in use.
- Keep windows closed when air system is on.
- Facilities Management Practices:
- Purchase energy star compliant equipment whenever possible.
- Incorporate renewable energy into projects whenever possible.
- Windows and doors should be kept closed when the heat and air conditioning system is operating.
- Electric vehicles are available to transport people and materials across campus.

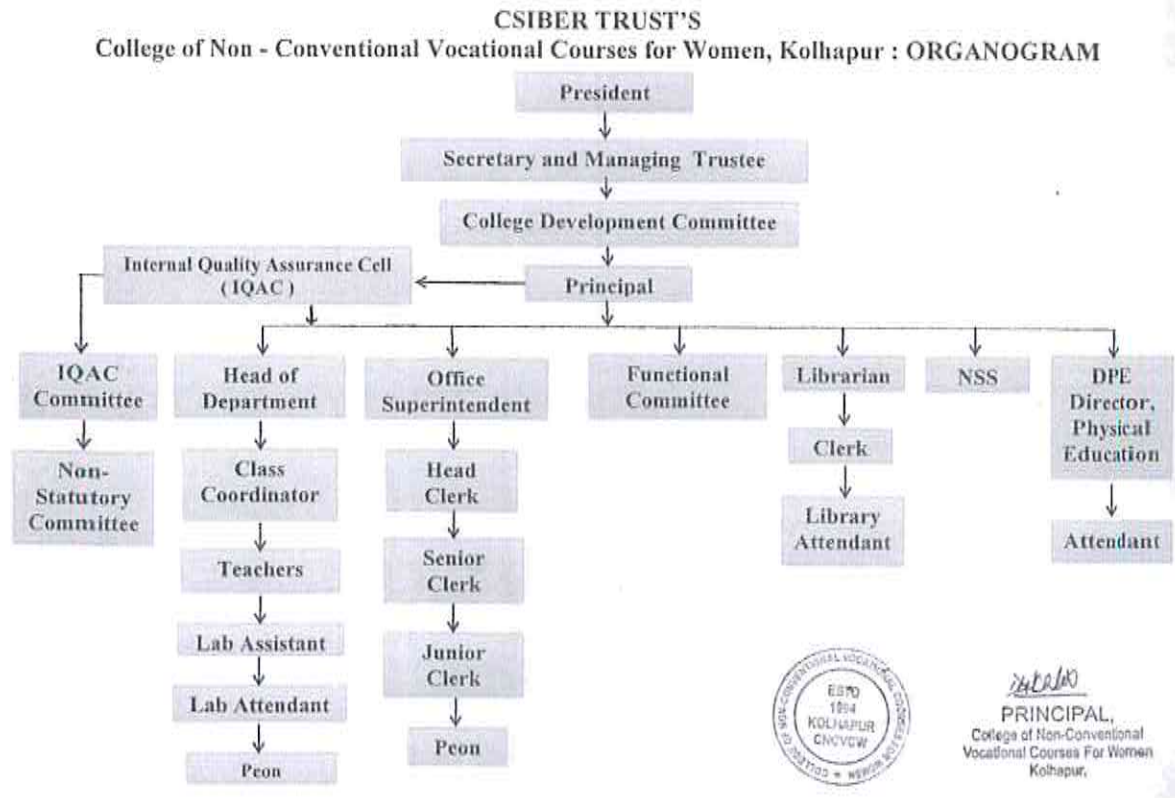



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- Energy saving fixtures, lamps, and bulbs are used to replace existing less efficient lighting whenever feasible.

COLLEGE ORGANOGRAM:

Organogram of the college is given in below : Figure 1




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COURSE OFFERED BY COLLEGE:


Sr. No.	Programme level	Name of programme
1	Undergraduate	B.Sc. (FTM)
2	Undergraduate	B.A. (DMFC)
3	Undergraduate	BID
4	Undergraduate	B.Com. Bank Management
5	Undergraduate	B.Com. Business Management
6	Undergraduate	B.Sc. Environment Science
7	Undergraduate	B.A. (Multimedia)
8	Post-Graduate Diploma	Post Graduate Diploma in Nutrition and Dietetics
9	Post-Graduate	M.Sc. (Food Science & Nutrition)

NAME AND ADDRESS OF COLLEGE:

Name of college:	College of Non-Conventional Vocational Courses for Women Kolhapur
Address	CSIBER campus, Shivaji University Road, Kolhapur. (Maharashtra)
Pin: 591 237	416004
Website:	www.cncvcw.edu.in

Designation	Name	Telephone with STD code	Mobile	Email
Principal	Dr. Anil R. Kulkarni	-	7588470146	principalcncvcw@siberindia.edu.in
Vice Principal	-	-	-	-
	Pooja S. Sarolkar	-	9075986907	sarolkarpooja07@gmail.com




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Anagha A. Raut	-	7875931852	anagharaut81@gmail.com
Amarr Mestry	-	9860703327	amarrmestry@gmail.com

Status of the institution:	Non – aided
Type of institution:	
a. By gender	Women's
b. By shift	-
Sources of funding:	Self-Supporting
a. Date of establishment of the college:	1994
b. University to which the college is affiliated:	Shivaji University
c. Details of UGC recognition:	-
Under section	
i) 2 (f)	-
ii) 12 (f)	-

3.1 ENERGY CONSUMPTION: Electricity is used for illuminating the rooms, fans, computers, Laboratory equipment, and pumps and for cooling rooms (AC).

Table No. 1: Number of rooms in the college:

1.	Total number of buildings	1
2.	Total number of rooms:	22
3.	Total number of labs:	5
4.	Girl's hostel:	2
5.	Rector bungalow (girls)	2
6.	Seminar halls	1



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Details of various sources of energy consumption units is given in table no. 2.

3.1 ENERGY CONSUMPTION UNITS

Table No. 2: Energy consumption units

	Energy sources	Electricity/generator/solar lamps
a.	No. of PC and laptops	112
b.	No. of tube lights	160
c.	No. of computers	112
e.	No. of UPS	3
f.	No. of fans	150
g.	No. of fridge	2
i.	No. of A.C.	3
j.	No. of LED bulbs	170
k.	Electric pump of 5 HP	2

3.2 ENERGY REQUIREMENT: sanctioned load (20 kw)

Electricity supplied from the Maharashtra State Electricity Board is the main source energy for the activities on the campus. In addition to the regular supply, energy consumed (KW) during the last year is shown in tabular as well as graphical form.





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Table No. 3 : Energy consumption during the Year 2020-21

Consumer No- 266513077467

Sr. No.	Months	Energy Units	Amount
1	January2022	1555	12149
2	February2022	1620	12638
3	March2021	2363	18929
4	April 2021	1677	13067
5	May2021	42	767
6	Jun2021	0	373
7	July2021	0	309
8	August2021	792	6409
9	September2021	513	4310
10	October2021	248	2317
11	November2021	1340	10532
12	December2021	1921	14903
Total		12,008	96,703

Electricity consumption

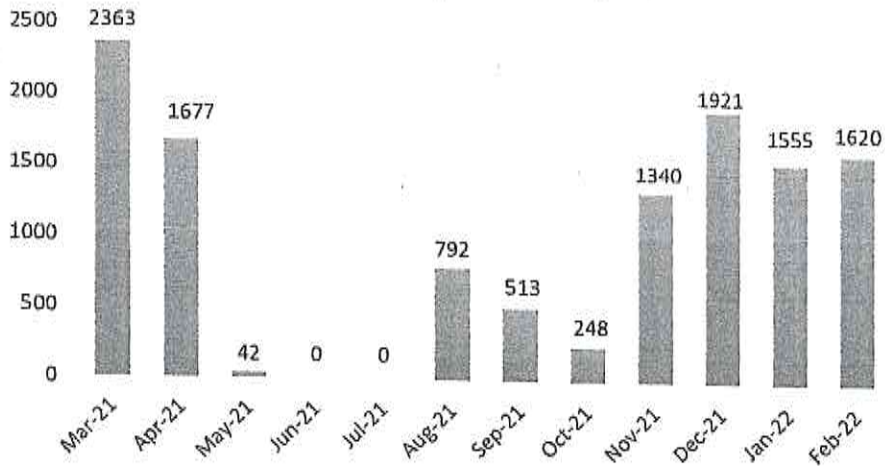


Fig.02: Average Energy Consumption the Year 2020-21

Energy conservation measures taken up by the College:

From the energy consumption pattern, it is found that there was increase of energy consumption in month of December to March as compared other months. Thereafter, energy consumption is gradually decreasing in May to November. Maximum energy requirement was 2363 Units during March and minimum 0 units was in June and July, in energy consumption during the last year is mainly switching over the use of LED bulbs in place high energy consuming 40-Watt tube lights.



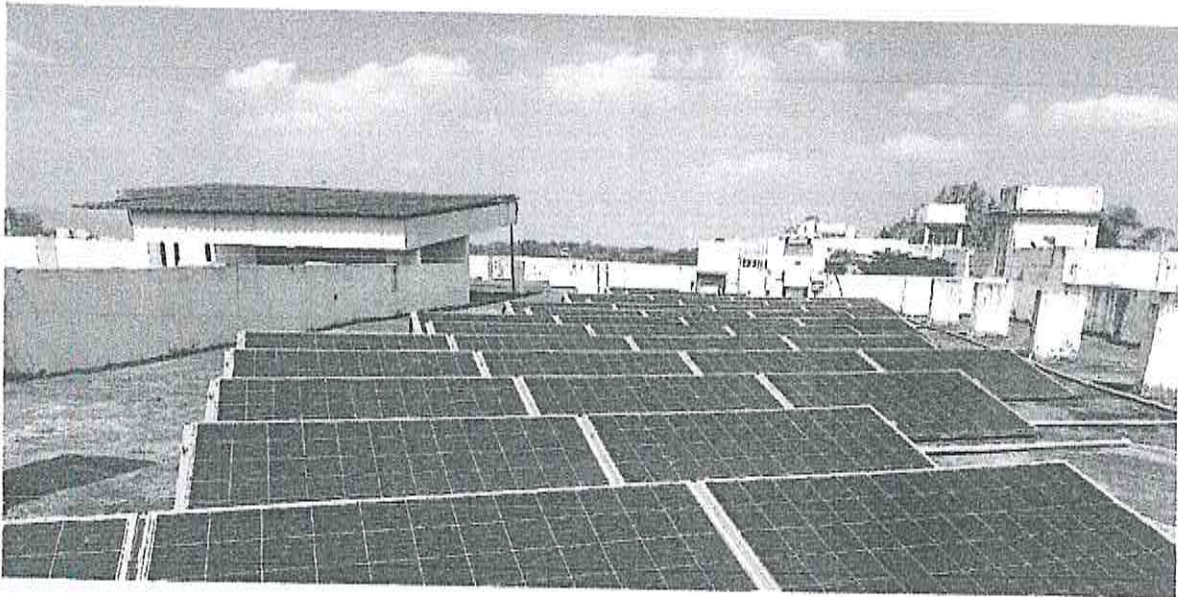
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3.4: USE OF RENEWABLE ENERGY:

1. Use of solar water heater: Previously, electricity based hot water geysers were used in the hostel which used to consume huge amount of energy. But then these waters geysers were replaced by solar water heater.

2. Efforts for carbon neutrality:

Thinking about carbon footprints is a simple way of thinking about ways to reduce environmental pollution. By reducing our carbon footprints, each one of us can contribute to making the earth a safer, better place to live.

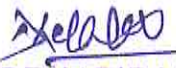


Solar Panel

Considering the growing energy demand from various sectors our college has decided to go for use of nonconventional energy resources for all its internal consumptions by installing roof top solar panels.

For the last five years, energy usage, our annual requirement is about 16824 units. We have installed 46 numbers of solar panels with the install capacity of 20kw with capital cost of Rs. 547676/- in the month of November 2018. Solar system has given excellent results which have generated 37372 units of solar energy for November 2018 to July 2020. On an average the system generates about 50 units of energy per day. That is about 18000 units per year against our requirement of 16825 units. Thus, making college self-sufficient to export the surplus energy to national grid.




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Generation of solar energy has given number of environmental benefits in terms of offsetting greenhouse gases. Such as solar energy generated is equivalent to creation of 41.6 hectare of forest land, saves 482278 kg of carbon dioxide which reduces pollution made by 6 passenger cars emitting carbon dioxide, over 106.32 hours. Reduction of 236.64 kg of nitrous oxide which is equivalent to requirement of power to 2094 computer for a year. And also reduces 1393 kg of sulphur oxide which equivalent to emission of carbon dioxide by TV over 103005 hours.

At CNCVCW College carbon footprint for indoor lighting in office building is considered. The performance of the building by using LCD and LED lights is monitored which reduces the building carbon foot print. The carbon foot print is monitored for –

1. Incandescent Light
2. Compact Fluorescent Light
3. LED Lights

3.5: ELECTRICITY

This electricity is produced by natural gas, coal, petroleum and some other renewable resources. Electricity is produced from different sources. The following table shows the quantity of greenhouse gas released from them:

Table No. 3: Electricity produced from different sources

Source	Million metric tons of CO ₂ emission for 1 year	Electricity generation (Billion kWh) for 1 year
Coal	1788	1882
Petroleum	106	119
Natural gas	337	562
Other	14	22
Non fossil fuels	None	1106
Total	2245	3691



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A single kilowatt-hour of electricity will generate 619 grams of CO₂ emissions.

Following sources of light are generally used:

1. Compact Fluorescent Light

Compact Fluorescent Light produce less heat and more visible light compare than incandescent lamp. We can calculate how much CO₂ will be emitted by 14watt incandescent bulb

- Power Consumption- 14 watts
- Operation per day- 10 hours
- Power Consumption per annum-51100 watt
- Electricity per hour (kwh) – 0.014 (1 kWh=619 g CO₂ can be released)
- Lighting Carbon Emission per year/lamp- (51.1*619g) - 31.6 kg.

A single 14 watts CFL lamp will generate 31.6 kilograms of CO₂ for every year. The reduction of carbon footprint is none for this lamp. CFL contains harmful mercury which creates mercury emission. Estimated suggestion led lights only will reduce our carbon foot print over than other lights.

2. Incandescent Light

Incandescent lamp is a source of light which produce light when the filament is being heated. It can release 80% electrical energy converted into heat energy. We can calculate how much CO₂ will be emitted by 40-watt incandescent bulb.

- Power Consumption- 40 watts
- Operation per day- 10 hours
- Power Consumption per annum-146000 watt
- Electricity per hour (kwh) - 0.04 (1 kWh=619g CO₂ can be released)
- Lighting Carbon Emission per year/lamp (146*619g) -90.3 kg.

A single 40 watts incandescent bulb will generate 90.3 kilograms of CO₂ for every year. The reduction of carbon footprint is none for this lamp.




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3.LED Lights

LED lights consumes low power and energy efficient over than other lights. Not even a single point we can't compare led lights with other lighting. We can calculate how much CO2 will be emitted by 8 watt LED lamp -

- Power Consumption- 8 watts
 - Operation per day- 10 hours
 - Power Consumption per annum-29200 watt
 - Electricity per hour (kwh) – 0.008 (1 kWh=619 g CO2 can be released)
 - Lighting Carbon Emission per year/lamp (29.2 *619g) - 18 kg.

A building's carbon footprint from led lighting can be reduced by 68%.

- Reduction in Carbon Footprint (tons)-0.122(12.28 kg)

The 8-watt LED equivalent will only be responsible 18 kilograms of CO2 over the same time span.

Table No. 4: Carbon foot prints

	CFL	Incandescent bulb	LED light
Power Consumption(watt)	14	40	8
Electricity(kwh)	0.014	0.04	8.008
Hours of Operation Per Day	10	10	10
Carbon Emissions (tons) per year/lamp	0.316	0.903	0.18
Reduction in Carbon Footprint (tons) / lamp	--		0.12

- LED light can reduce our carbon footprint by 0.12 tones per year.
- Led light does not contain mercury; it is a big benefit for this lamp.
- CFL contain 3-5mg per bulb which is poisonous. Mercury emission is 1.2mg from power plant using CFL.
- Incandescent, it is 5.8 mg from power plant.



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The 8-watt LED equivalent will only be responsible 18 kilograms of CO₂ over the same time span.

Based on above comparisons, LED emerges as the best option to reduce carbon footprint.

At CNVCW College, all together there are 20 class rooms with 170 LED

Details of CO₂ emitted from these lights are given in table 5.

Table No. 5: Details of CO₂ emitted due to bulbs

Light	No. of bulbs	CO ₂ emitted per 40-watt lamp / year	Total CO ₂ emitted per year
LED	170	18.0kg	3060kg

Table No.6: Total CO₂ emissions:

Light	No. of bulbs	CO ₂ emitted per 40 watt lamp / year	Total CO ₂ emitted per year	Reduction of CO ₂ emission
Incandescent	-	-	-	-
CFL	-	-	-	-
LED	170	18.0 kg.	3060 kg	12,480kg

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4.0: Suggestions:

- Even after installation of Solar Power Pack system, consumption of energy can be saved, so that surplus energy can be sold.
- Replacement of conventional bulbs has contributed significantly in the reduction of CO₂.
- Further, all the fans should be replaced in phased manner energy efficient five-star rating fans.



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