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EXTERNAL GREEN AUDIT TEAM

Following are External GREEN Audit Team the members

Our Audit Team has visited KPE Society's Dr: G.M.Patil Law College, **DHARWAD Dist: DHARWAD, 580 001** on 28th Sep 2022 and undertook the *ENVIRONMENT, ENERGY* and *GREEN* Audit works of college campus. The external Audit team consists of three members.

Prof: B B Bavache as Energy Auditor, Dr : R F Inchal as Taxonomist and Prof : Prabhakar S.Malagar as Environmentalist

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Principal

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GREEN AUDIT

This is to certify that, *our Audit Team* has visited KPESociety's Dr: G.M.Patil Law College, **DHARWAD Dist: DHARWAD, 580 021** on 22nd Sep 2022 and undertook the "**GREEN AUDIT** " work of college campus.

The college is located in HUBBALLI-DHARWAD city Corporation limits. The twin cities together make the second largest city in Karnataka by population. The twin cities are selected for **solar cities /green cities** in the year 2017 by **Govt of India**. Hubballi-Dharwad cities are emerged as an educational hub in north Karnataka. Both cities are semi organized Industrial cities. Both cities seem to be free from industrial harmful gas effluents.

Most of the significant plants in the campus are indentified and nomenclatured.

The list is enclosed,

1.	Total number of trees :	:52	(nomenclatured).
2.	Total number of tree species	: 10	(nomenclatured).
3.	Medicinal plants	: 22	(nomenclatured).
4.	Rare plants	: 01	(nomenclatured).
5.	Endangered plants	: 02	(nomenclatured).
6.	Oxygen oozing plants	: 10	(nomenclatured).
7.	Sacred plants	: 06	(nomenclatured).
8.	Climbers	: 03	(nomenclatured).
9.	Ornamental plants :	: Many	(nomenclatured few).
10.	Herbs and Shrubs	: Many	(nomenclatured few).

"My college My plant" **an innovative program to nourish the plants has been popularized. Staff** and students have taken some plants to nourish at their own cost.

The campus is lush green and most suitable Academic developments.

Technical staff

Convener
GREEN Audit Team

Place : Dharwad
Date: 28th Sep 2022

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KPES 's

Dr: G. M. Patil Law College , DHARWAD

CARBON FOOT-PRINT AND HAND PRINT OF THE INSTITUTE

(ISO 14064)

"A carbon foot print of the Institute is the total sum of Green House Gases (GHG) emissions caused by the organization event or product".

Input data

- Electric energy consumed KWh/monthly-avrg last three years = 810 Units/month
- No of petrol cars used staff = 2
- No of diesel cars used staff = Nil
- No of Omni buses run by college = Nil
- No of two wheelers brought by students = 60
- LPG consumed in(kg) /month (staff room) = 0.00 cylinder / month
- LPG consumed in(kg) /month (canteen) = 0.00 cylinder / month

Consumption rates

- Electric energy consumed (Avrg) KWh)/ monthly last three years = 810 Units/month
- Average petrol consumed petrol car(Liter)/month =12 lit /month
- Average diesel consumed diesel l car(Liter)/month =12 lit /month
- Average petrol consumed by students-two wheelers (Liter)/month =2 lit /month
- Average diesel consumed diesel by Omni buss =0.00x (5 Liter)/day
- LPG consumed in(kg) /month (staff room) = 7.00 kg /month
- LPG consumed in(kg) /month (canteen) = 28.00kg /month

Carbon foot print by the way of in Kg of CO_2 equivalents

1. Electricity = 810x12x0.85 = 8262.00
2. Petrol (staff) = 2 x 12x12 x2.296 = 661.00
3. Diesel (staff) = 0 x12 x 12 x2.653 = 0.00
4. Two wheeler Petrol (staff and students) = 60x2x12 x210/365 x 2.296 = 1902.00
5. Diesel by Omni buses = 0.00x100 x12x 2.653x210/365 = 0.00
6. LPG (staff room) =0.00x12x2.983 = 0.00
7. LPG (Canteen) = 0.00x12x2.983 = 0.00
8. **Net Carbon foot print in ton of CO_2** =10825 Kg /year
   = 10.825 ton/year

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KPES 's

Dr: G. M. Patil Law College , DHARWAD

CARBON FOOT-PRINT AND HAND PRINT OF THE INSTITUTE

(ISO 14064)

"A carbon Hand print of the Institute is the total sum of positive impact produced on the environment by reducing the carbon foot print ".

To **reduce** this "*Carbon foot print*", "*Carbon hand print*" following techniques practiced

i) popularizing use of solar energy roof top solar harvesting
ii) creating awareness regarding energy sensitization programs
iii) promoting electrical vehicles
iv) purchasing BS VI certified vehicles
v) creating awareness annual PUC test of vehicle (**P**ollution **U**nder **C**ontrol tests)
vi) Installing stand alone solar units in the campus

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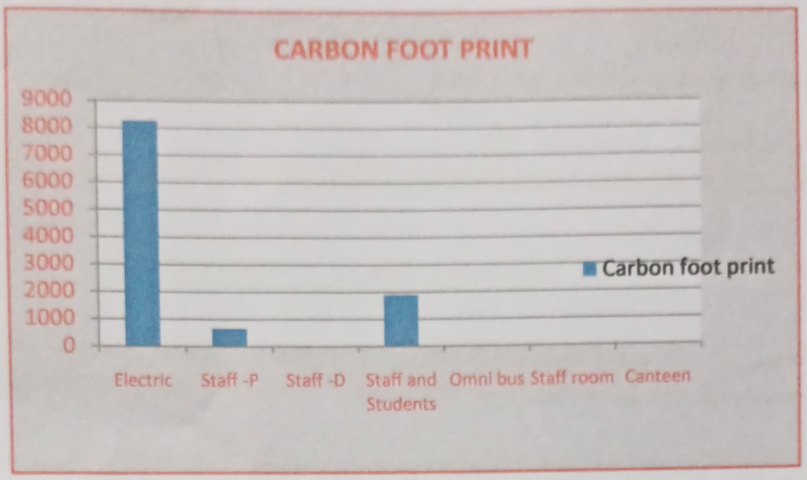
K P E Society's

Dr: G.M.Patil Law College, **DHARWAD**

1



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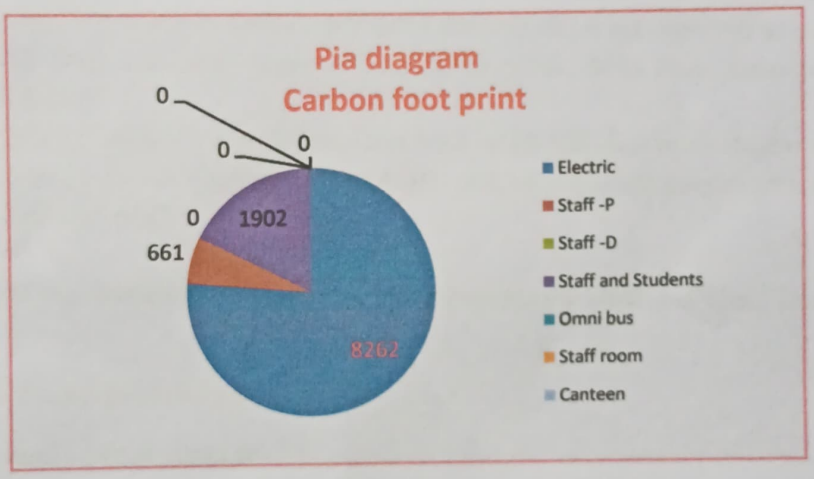

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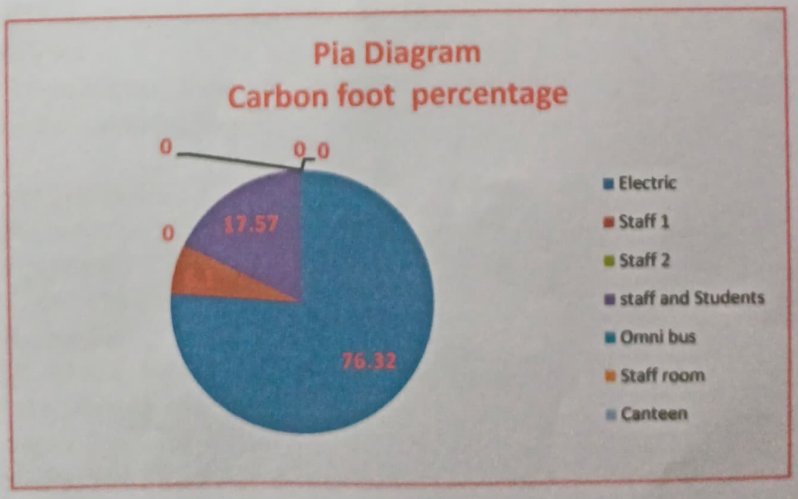

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ENVIRONMENT AUDIT REPORT

This is to certify that, *our Audit Team* has visited KPE Society's Dr: G.M.Patil Law College, **DHARWAD Dist: DHARWAD, 580 001** on 28th Sep 2022 and undertook the ***Environment Audit*** work of college campus.

The college is located in HUBBALLI-DHARWAD city Corporation limits. The twin cities together make the second largest city in Karnataka by population. The twin cities are selected for **solar cities /green cities** in the year 2017 by **Govt of India**. Hubballi-Dharwad cities are emerged as educational hub in north Karnataka. Both cities are semi organized Industrial cities. Both cities seem to be free from industrial harmful gas effluents.

AIRVEDA Camera Techniques Beta Attenuation Method (BAM) has been employed to check the air quality parameters in terms of Air Quality Index **(AQI)** and audible intensity measured by standard sensors of sound, in decibel Bell **(dB)**.

The details of Geographical, Environmental and Weather parameters Dharwad Dist: Dharwad are as follows.

GEOGRAPHICAL PARAMETERS

1. Altitude from sea level : 744 m. (2441 ft)
2. Latitude : 15.453258 N.
3. Longitude: 75.005844 E.
4. Weather Chart of Dhawad (*Koppen Gieger Weather Chart.*) : Aw- BSh (sand witch zone)
5. Topo sheet : enclosed
6. Perennial water flow direction : East
7. Dharwad : It is a semi industrial city.

PHYSICAL PARAMETERS

8. Average Temperature : 25 to 28 Celsius.
9. UV Index : 6 to 7 normal
10. Average rainfall : 280 - 310 mm.
11. Rainy peak month : August
12. Average Humidity : 40 % to 50% as per AIR VEDA techniques
13. Least humid period : March to May
14. Clear Visibility : up to 8 to 9 km
15. Gust and wind velocity 20 to 30 km /h
16. Average pressure : 1010 mb
17. Snow fall : Nil

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SUSTANABLE POLLUTION LEVELS

18. **AQI level : (38 Good)** (safe as MoEF per standards)
19. **RPM** : 10 to 20 µg m^{-3} moderate (605 µgm^{-3} as per MoEF standards).
20. **SPM**: 36 to 42 µgm^{-3} * (100 µgm^{-3} as per MoEF standards).
21. **NO_x** level : 0.9 to 1.2 µg m^{-3} (80 µgm^{-3} as per MoEF standards).
22. **SO_x** level : 0.9 to 1.8µgm^{-3} (50µgm^{-3} as per MoEF standards).
23. **O_3** level : 3.0 to 5 µg m^{-3} (100 µgm^{-3} as per MoEF standards).
24. **CO** level: 10.00 to 15.00 µg m^{-3} (25 µg m^{-3} as per MoEF standards).
25. dB level is around 40 to 55 better range . (as per the BIS audible standards).
26. The illumination level are all better. (as per BIS mark 3646 part I).
27. The pollution levels are within the safe range (as per MoEF standard).

*** city limits**

TYPE OF SOIL , PH, QUALITY OF WATER AND GREENARY

28. **Type of soil** :Red loamy mix with Black cotton soil with PH of soil : 7 to 8
29. Direction of perennial flow of water : East
30. **Drinking Water quality**: RO and UV backed .
31. Greenery in the campus : Appreciable

MISCELLANEOUS

32. Max Hottest day 2nd May 2022, 12.26 PM +5.30 GMT
33. Max Humid day 10th Aug 2022,12.35 PM + 5.30 GMT
34. Distance from Equator 1703.60 km
35. Distance from Tropic Cancer 897.83 km
36. Electromagnetic Radiation < 40µT (safe as per the BIS standards).

All Environmental related charts and their importance are submitted to the college.

Technical staff

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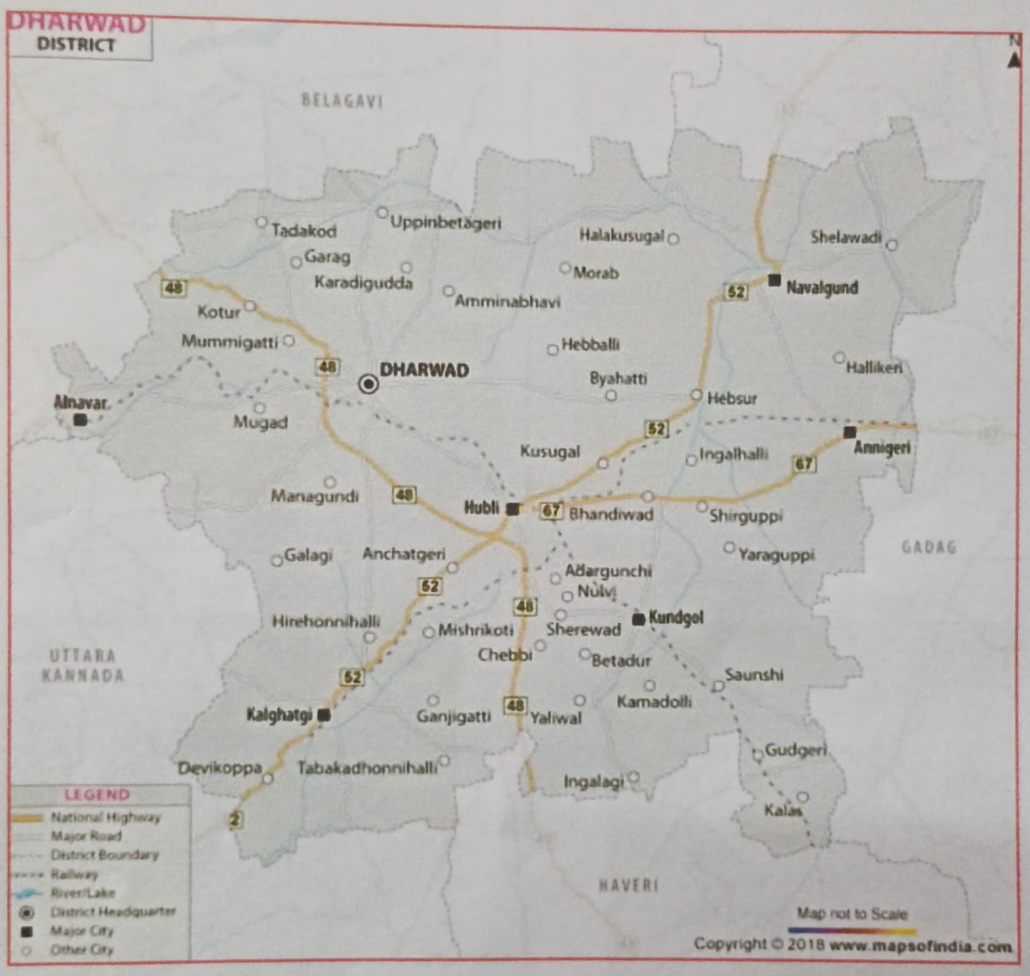
Convener
Environment Audit Team

Place : Dharwad
Date :28th Sep 2022

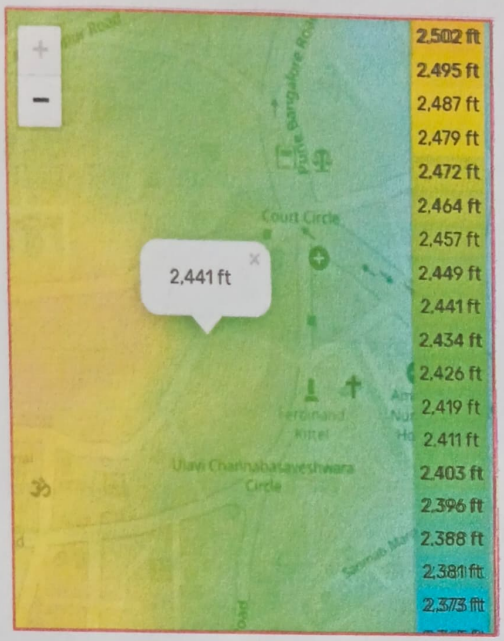
Principal

DHARWAD DISTRICT MAP

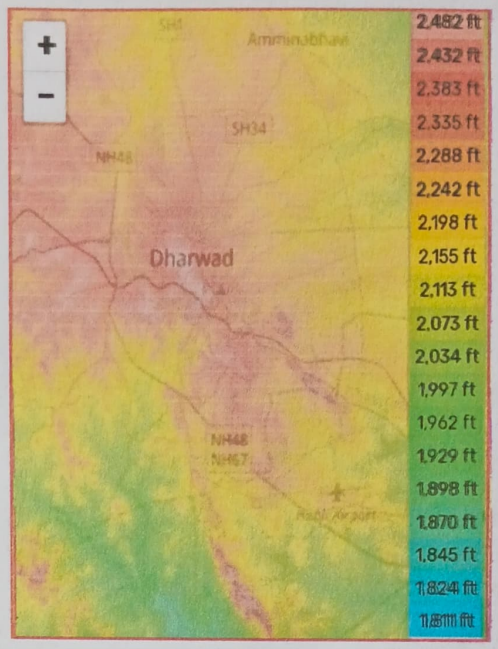


Topo Sheet of Dharwad

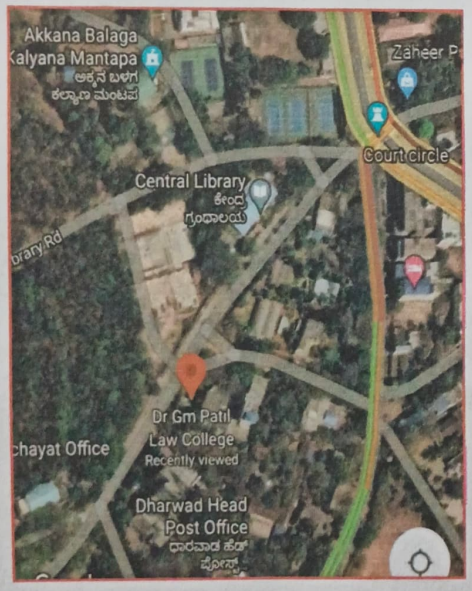
Elevation



Topo sheet



Satellite Location Map



Latitude : 15.453258 N Longitude : 75.005844 E

College Building

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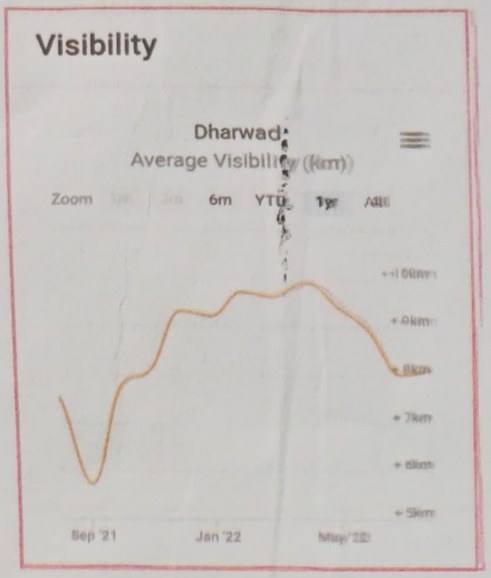
K.P.E.Society's

Dr. G. M.Patil Law college, Dharwad

1



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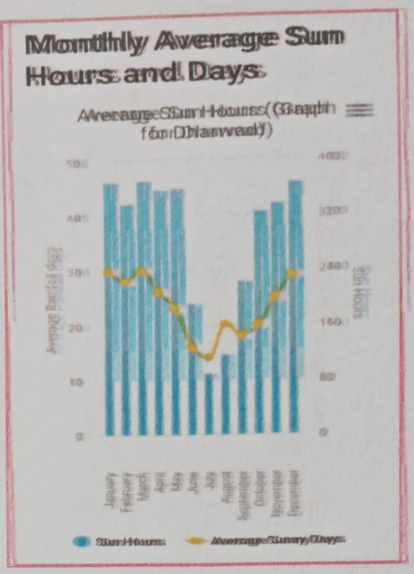

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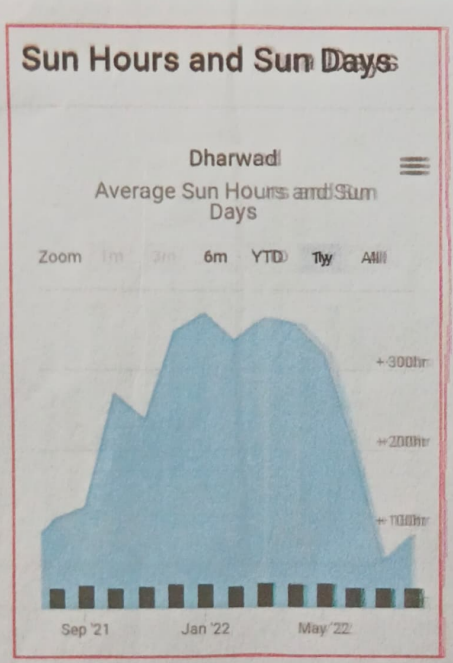

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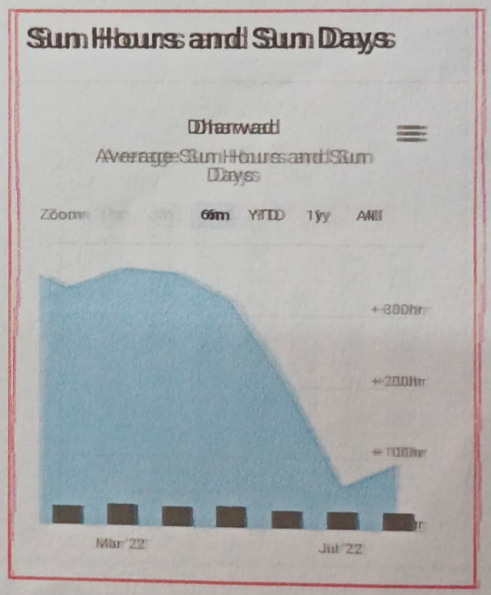

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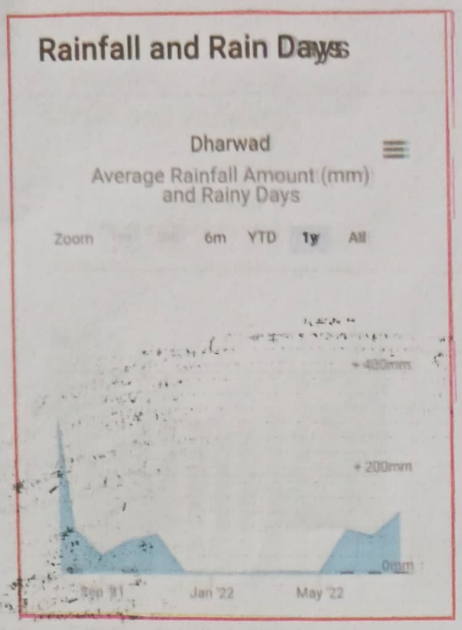

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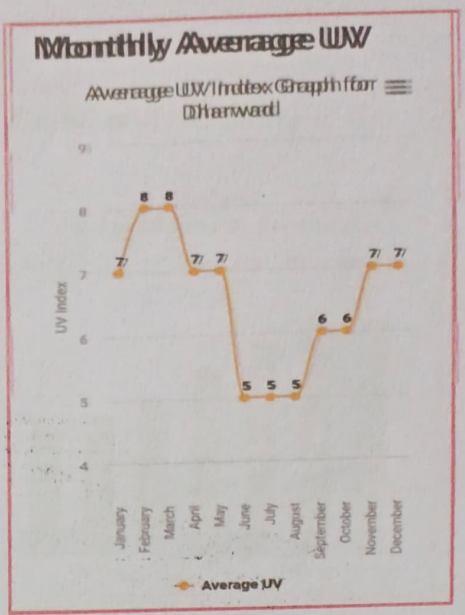

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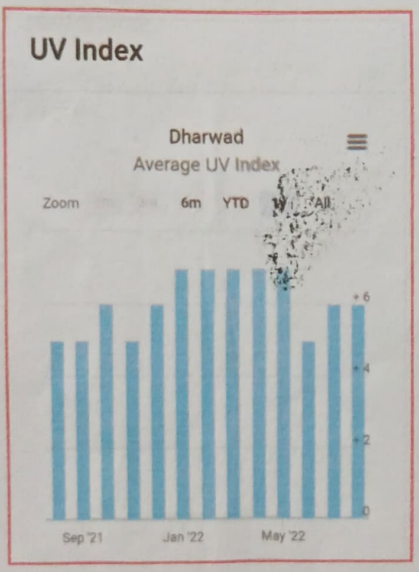

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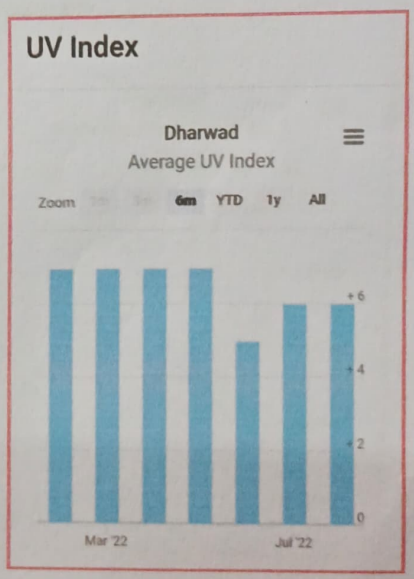

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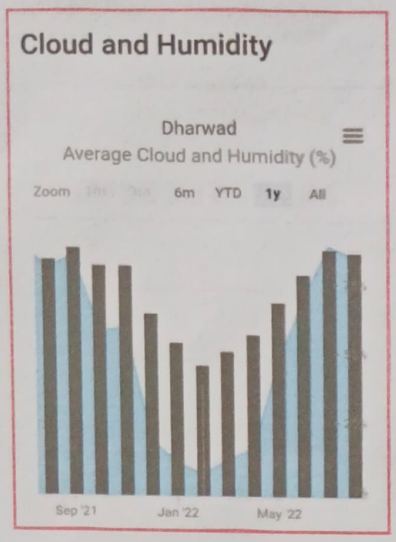

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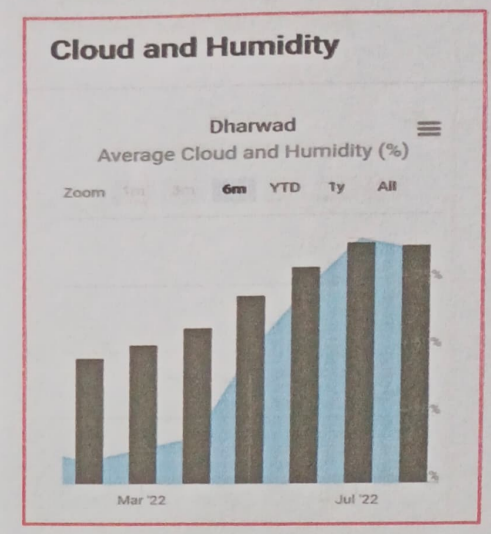

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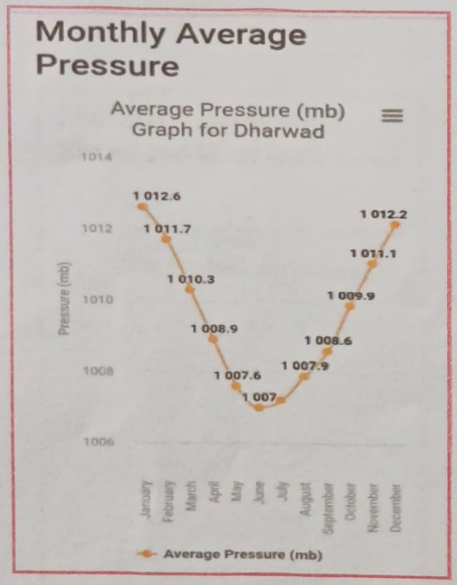

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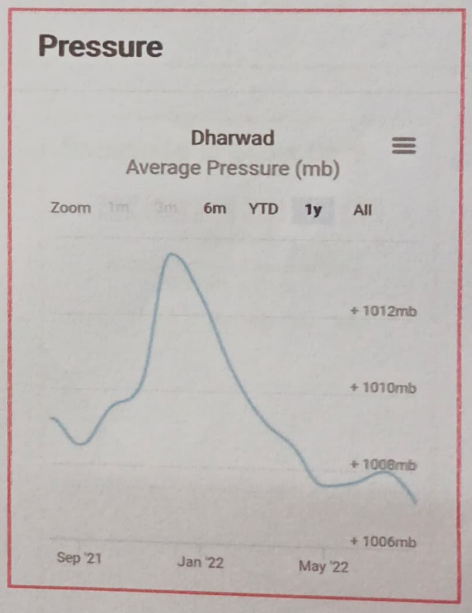

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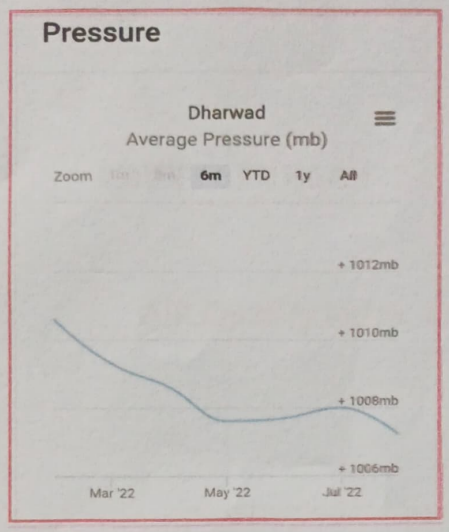

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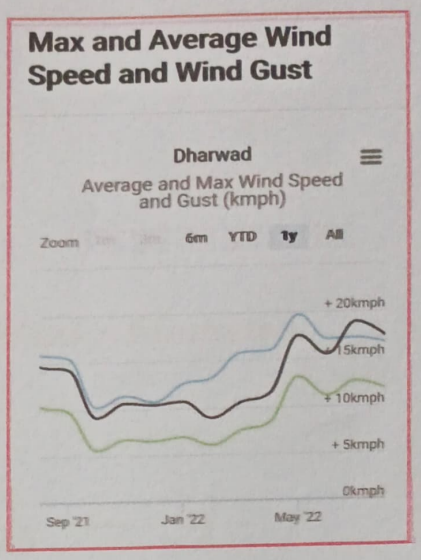

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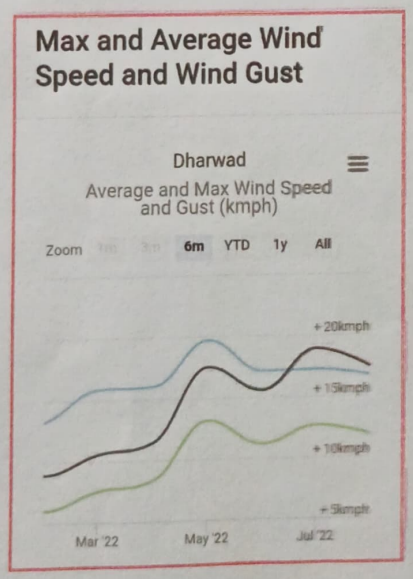

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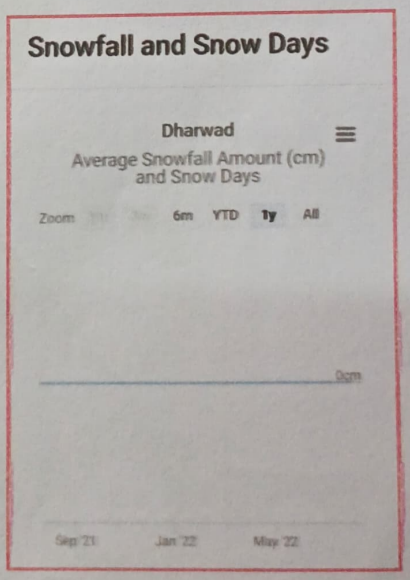

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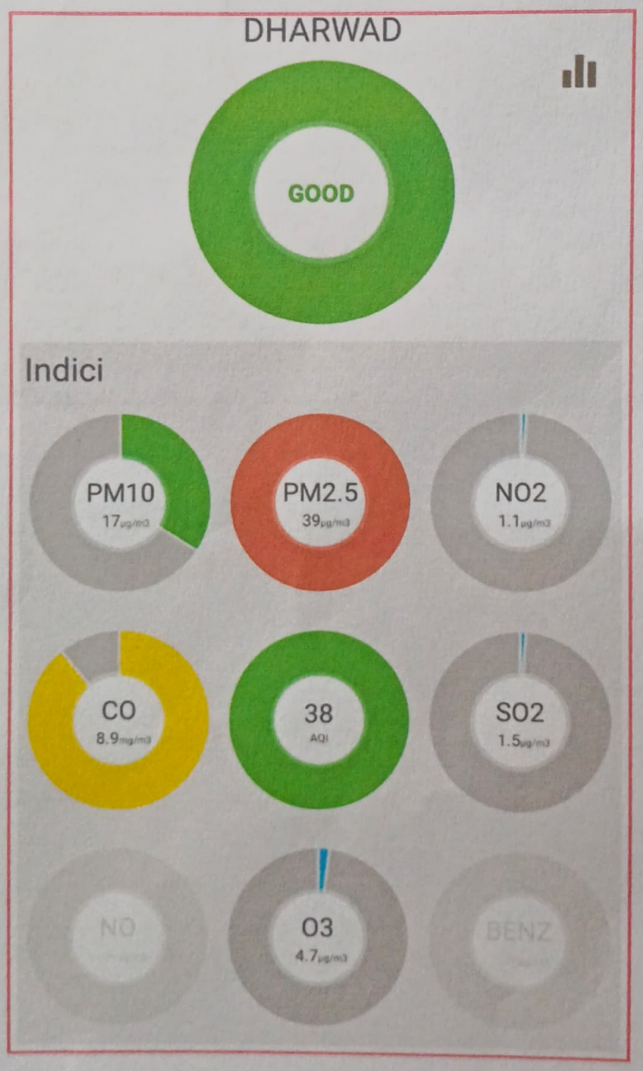
AIR Quality Index and Pollution Parameters



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K.P.E.Society's

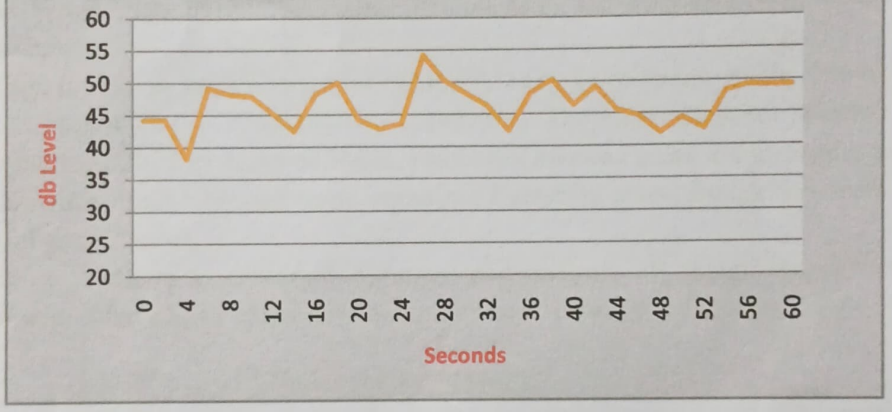
Dr. G. M.Patil Law college, Dharwad

Sound intensity Level

1

Library (Proximity) @ 12.20 PM

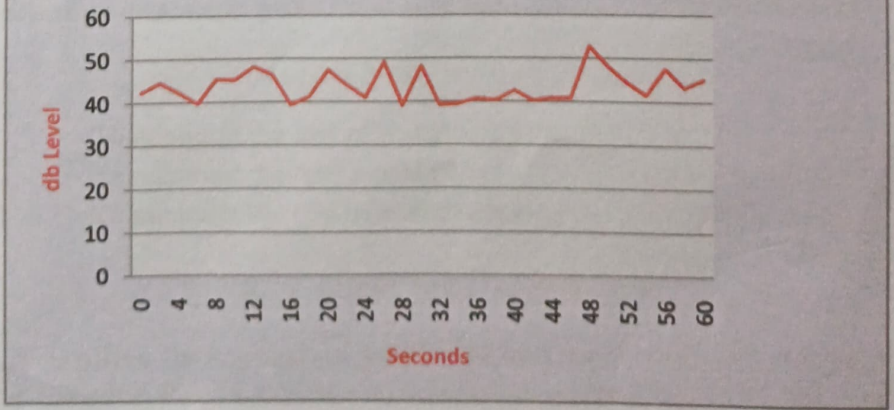
Sound dB Level : 41.84 rms value



2

Office (Proximity) @ 12.46 PM

Sound dB level : 43.71 rms value



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ENERGY AUDIT

This is to certify that, *our **Energy Audit Team*** has visited KPE Society's Dr: G.M.Patil Law College, **DHARWAD Dist: DHARWAD, 580 001** on 22nd Sep 2022 and undertook the Energy Audit work of college campus.

The college is located in HUBBALLI-DHARWAD city Corporation limits. The twin cities together make the second largest city in Karnataka by population. The twin cities are selected for **solar cities /green cities** in the year 2017 by **Govt of India**. Hubballi-Dharwad cities are emerging as an educational hub in north Karnataka. Both cities are semi organized Industrial cities. Both cities seem to be free from industrial harmful gas effluents.

The Energy Audit is a retrospective survey and analysis of energy requirements. The energy conservation principles have been adopted with minimal use of energy judiciously .i.e

"***Whenever necessary***
and
Where ever necessary use electric power".

All the energy requirements are collected from each and every class room, laboratory, office, staff common room, library, computer lab etc,.

A separate log sheet of energy consuming appliances is made ready for ease of energy management. An energy **sensitization awareness program** is developed among the staff and students.

Need of Energy Audit

To minimize the cost of energy consumption
To minimize the operational costs
To minimize the cost of maintenance

ENERGY AUDIT METHODOLOGY

The Audit involves visiting physical position of load and to carry out the inventory of load. Due measurements of electrical load of requirement and adequate circuit is carried out . Energy bill received from **HESCOM** is audited and analyzed ,various positions of energy. Present requirements are judged and finalized. Energy conservation and saving opportunities are identified, proper circuitry plans are implemented.

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HESCOM CONSUMER BILL for the last **five years** have been analyzed
Analysis follows on separate sheet. The energy sensitization programs are notified among the staff and it is found that there is decline trend in use of electrical power(very judiciously) without affecting the routine work of college activities.
There are seven power connection nodes provided with separate meters. Graphical analysis of use of power meter wise, and total bill wise (consolidated) has been worked out .

The analytical data is as follows

S.No	Year	Average Power units consumed	Remarks
1	2017	1052**	**Achievement** A graphical analysis shows that in the beginning of first two more energy was utilized because of two last year because of **infra structure developments.** Later it is found that there is "***decline trend***" of – 9.88%/year as compared to utilization in 2017
2	2018	968	
3	2019	**869**	
4	2020	630	
5	2021	532	
	Average*	**810**	
		** Max	
***Note** : optimum utilization max consumption of electric power in the year 2017, 2018 is because of infra structure developments. Later there is a conservation of electric energy (Adopting modern electric appliances)			

It is observed that roof top solar energy harvesting units are installed in campus. Because of this facility the college is getting electric bills as per HESCOM norms.

** Decline trend indicate practicing "use of electric power is done judiciously". This is reflected from the **EXCEL graphical analysis** sheets.

Technical staff

Convener
Energy Audit Team

Place : Dharwad
Date : 28th Sep 2022

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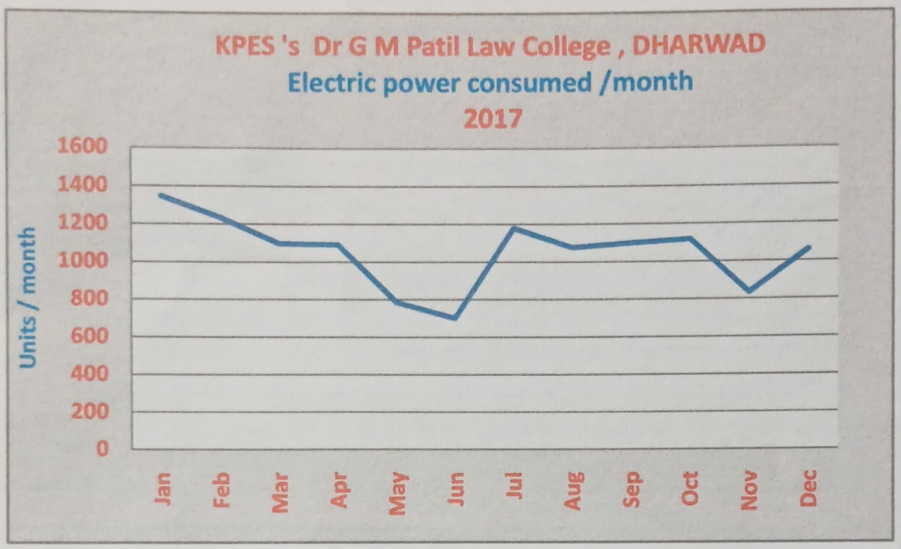
Principal

KPES 's

Dr: G. M. Patil Law College , DHARWAD

Analysis of Energy Audit

1



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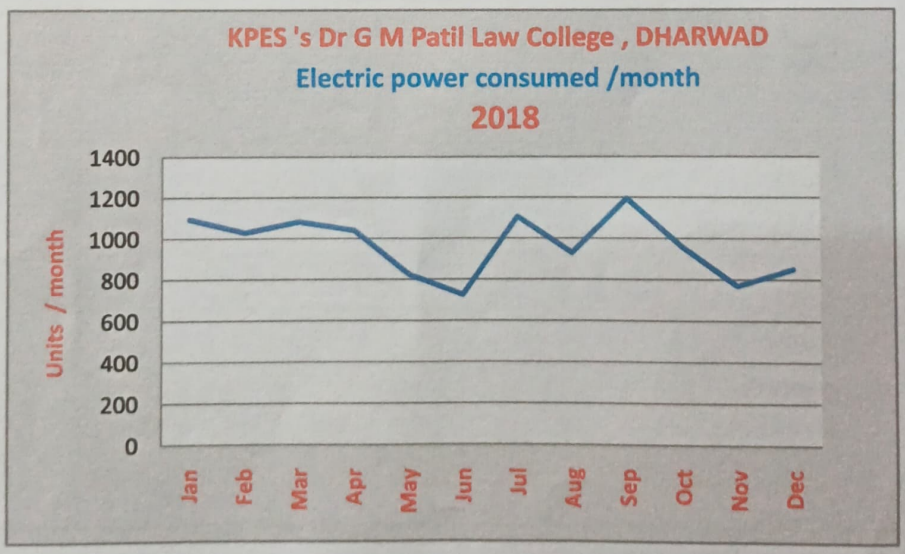

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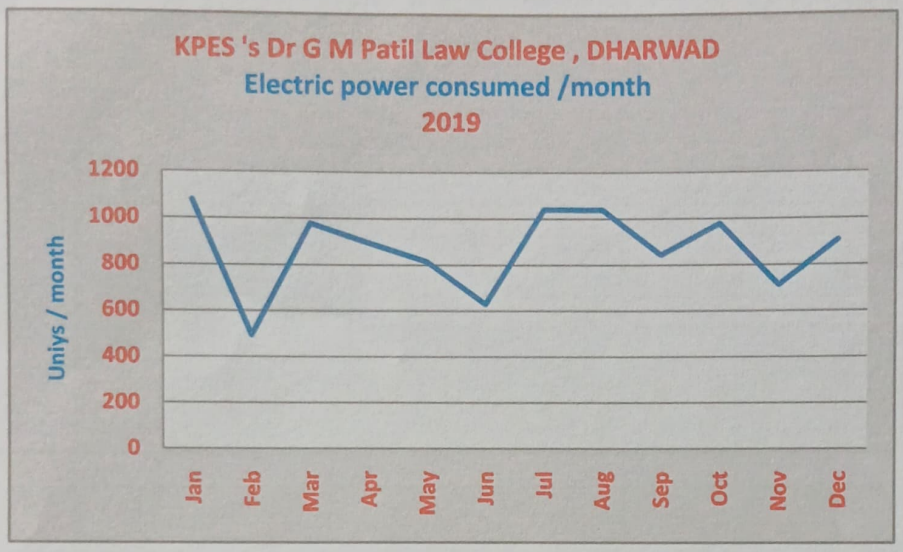

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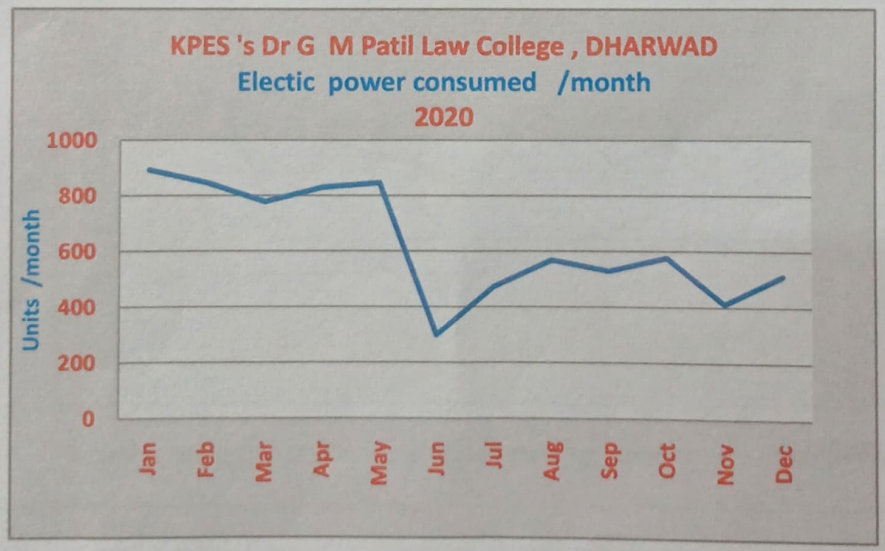

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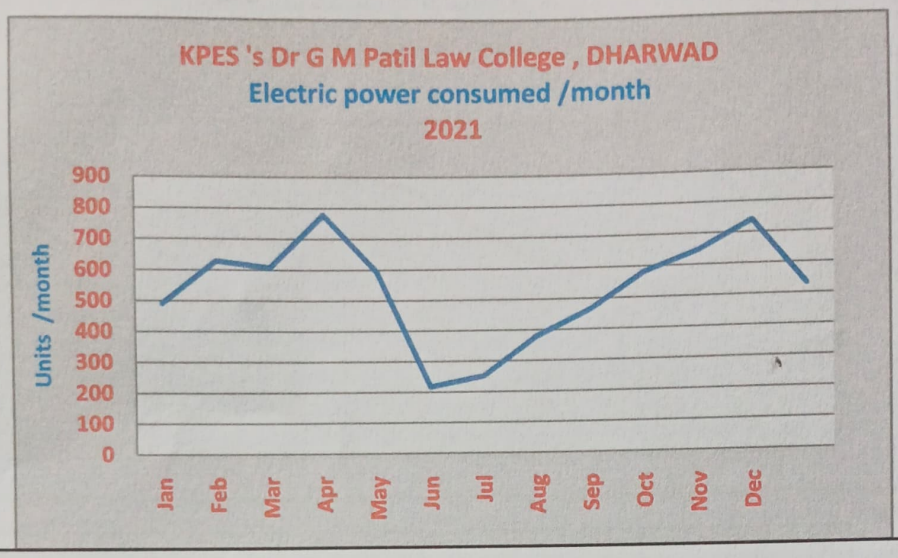

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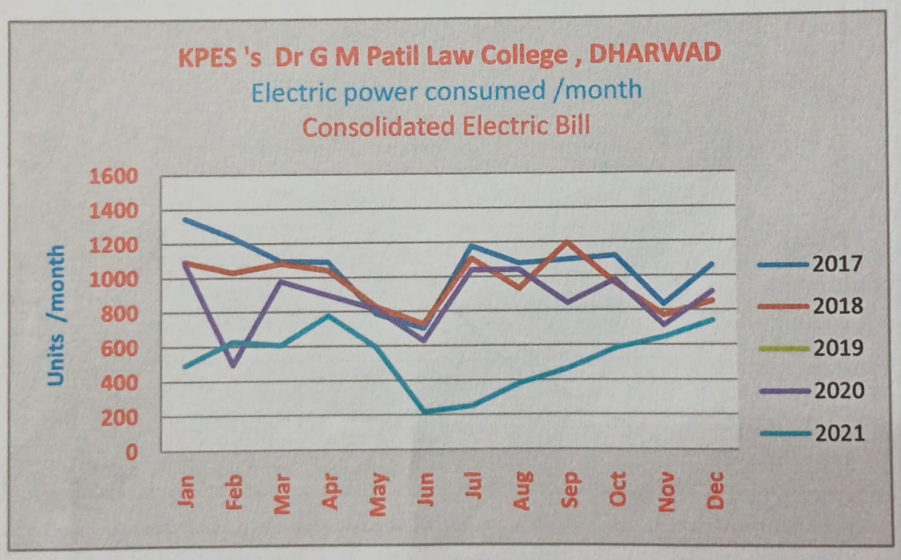

Monthly utilization of electric is almost running parallel with small variation

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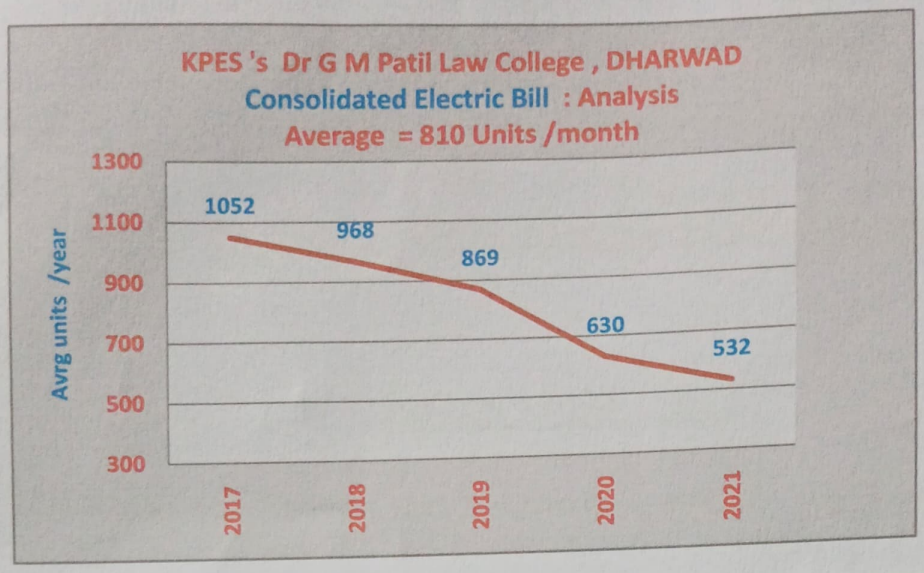
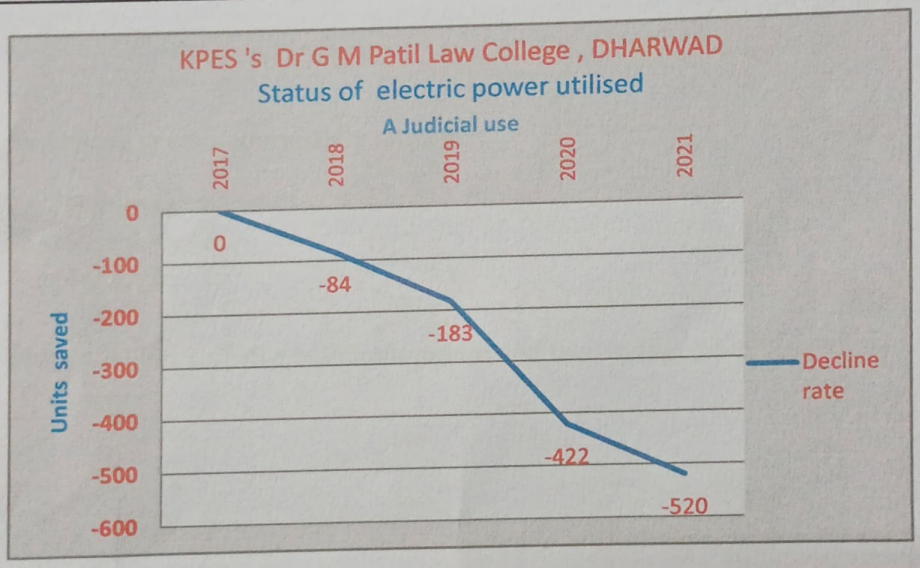


8



Observations :

1. The college is utilizing average energy of about 810 Units / month since last five Years.
2. Variation in Energy utilization figures lay in the either side of mean range.
3. In year 20021 there is a decline in the energy utilization about 49.42 % w.r.t the maximum utilization.
4. There is optimum utilization of energy in the year 2017,because of infra structure Developments.
5. It clear indication of **judicious use of electric power.**
6. Saving in power achieved by green energy creating energy sensitization programs and adopting smart technology .
7. Monthly utilization of electric is almost running parallel with small variation

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GREEN AUDIT – BILL

Received RS. 8000/- (Rupees Eight Thousand Only) for having undertaken, (22nd Sep 2022 and on 28th Sep 2022) NAAC Criteria, VIII 7.1.6 work at

K.P.E.Society's
Dr. G. M.Patil Law college, Dharwad

Following are the consultancy works.

1) *Environment Audit*
2) *Energy Audit*
3) *GREEN Audit*

The above bill includes both honorarium and conveyance allowance.

Convener
Green Audit Team.

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