GREEN AUDIT REPORT

2022 - 2023

Kongunadu Arts and Science College (Autonomous)

Re-accredited by NAAC with 'A^{+}' Grade (4th cycle)

College of Excellence (UGC)

29th Rank among Colleges in NIRF

Coimbatore – 641 029, Tamil Nadu

GREEN AUDIT REPORT

2022 – 2023

Kongunadu Arts and Science College (KASC) is one of the oldest colleges in Coimbatore, the western part of Tamil Nadu where agriculture and industrial developments are very progressive in Tamil Nadu. In addition to the best education for rural students, the college provides the best research opportunities and provision for extension activities for the interest of the common public. More than 50% of the students are mainly female gender almost in all subjects. The college is situated at the foothills of the Western Ghats at an altitude of 400 meters MSL. It indicates that it is very accessible to the vegetation and other landscapes of the Western Ghats, particularly the Nilgiris. The college administration is having a keen interest in maintaining a green campus, an eco-friendly approach towards getting sustainable ecosystem service. "Green auditing" is practiced every year in order to improve environmental protection. The Department of Botany of KASC has been doing a green auditing process since 2014 – 2015. It includes auditing of the flora and fauna, plastic free zone, green cover, solar energy, and usage of LED lights.

Flora

The list of trees, shrubs, climbers and herbs available in the year 2022 - 2023 is given below.

S. No.	Scientific Name	Family
1.	*Abutilon indicum*	Malvaceae
2.	*Acacia nilotica*	Mimosaceae
3.	*Acalypha indica*	Euphorbiaceae

4.	*Acanthospermum hispidum*	Asteraceae
5.	*Achyranthes aspera*	Amaranthaceae
6.	*Aegle marmelos*	Rutaceae
7.	*Aerva lanata*	Amaranthaceae
8.	*Ageratum conyzoides*	Asteraceae
9.	*Allamanda cathartica*	Apocynaceae
10.	*Albizia amara*	Mimosaceae
11.	*Aloe vera*	Liliaceae
12.	*Alternanthera pungens*	Amaranthaceae
13.	*Alternanthera sessilis*	Amaranthaceae
14.	*Alysicarpus monilifer*	Fabaceae
15.	*Alysicarpus rugosus*	Fabaceae
16.	*Amaranthus spinosus*	Amaranthaceae
17.	*Andrographis paniculata*	Acanthaceae
18.	*Anthurium andraeanum*	Araceae
19.	*Argemone mexicana*	Papaveraceae
20.	*Asystasia gangetica*	Acanthaceae
21.	*Azadirachta indica*	Meliaceae
22.	*Bauhinia malabarica*	Caesalpinaceae
23.	*Blepharis repens*	Acanthaceae
24.	*Boerhavia diffusa*	Nyctaginaceae
25.	*Boerhavia erecta*	Nyctaginaceae

26.	*Bougainvillea glabra*	Nyctaginaceae
27.	*Barleria cuspidata*	Acanthaceae
28.	*Brachiaria ramosa*	Poaceae
29.	*Brachiaria mutica*	Poaceae
30.	*Callistemon lanceolatus*	Mytraceae
31.	*Calotropis gigantea*	Asclepiadaceae
32.	*Cardiospermum halicacabum*	Sapindaceae
33.	*Caryota urens*	Arecaceae
34.	*Cassia auriculata*	Caesalpiniaceae
35.	*Cassia fistula*	Caesalpiniaceae
36.	*Cassia siamea*	Caesalpiniaceae
37.	*Catharanthus roseus*	Apocynaceae
38.	*Chloris barbata*	Poaceae
39.	*Cleome pentaphylla*	Cleomaceae
40.	*Cleome viscosa*	Cleomaceae
41.	*Clitoria juncea*	Fabaceae
42.	*Clitoria ternatea*	Fabaceae
43.	*Coccinia indica*	Cucurbitaceae
44.	*Coleus aromaticus*	Lamiaceae
45.	*Commelina benghalensis*	Commelinaceae
46.	*Corchorus tridens*	Tiliaceae
47.	*Corchorus olitorius*	Tiliaceae

48.	*Cissus quadrangularis*	Vitaceae
49.	*Crinum asiaticum*	Amaryllidaceae
50.	*Croton bonplandianum*	Euphorbiaceae
51.	*Cuscuta chinensis*	Convolvulaceae
52.	*Cynodon dactylon*	Poaceae
53.	*Cyperus iria*	Cyperaceae
54.	*Cyperus rotundus*	Cyperaceae
55.	*Dactyloctenium* sp.	Poaceae
56.	*Datura metel*	Solanaceae
57.	*Delonix regia*	Caesalpinaceae
58.	*Digera arvensis*	Amaranthaceae
59.	*Digitaria longiflora*	Poaceae
60.	*Eragrostis riparia*	Poaceae
61.	*Emilia sonchifolia*	Asteraceae
62.	*Eucalyptus tereticornis*	Mytraceae
63.	*Eupatorium odoratum*	Asteraceae
64.	*Euphorbia heterophylla*	Euphorbiaceae
65.	*Euphorbia microphylla*	Euphorbiaceae
66.	*Euphorbia hirta*	Euphorbiaceae
67.	*Evolvulus alsinoides*	Convolvulaceae
68.	*Ficus religiosa*	Moraceae
69.	*Gisekia pharnaceoides*	Aizoaceae

70.	*Gloriosa superba*	Liliaceae
71.	*Gomphrena decumbens*	Amaranthaceae
72.	*Gymnema sylvestre*	Asclepiadaceae
73.	*Heliotropium indicum*	Boraginaceae
74.	*Hibiscus micranthus*	Malvaceae
75.	*Hibiscus ovalifolius*	Malvaceae
76.	*Ichnocarpus frutescens*	Apocynaceae
77.	*Imperata cylindrica*	Poaceae
78.	*Indigofera enneaphylla*	Fabaceae
79.	*Indigofera viscosa*	Fabaceae
80.	*Ipomoea obscura*	Convolvulaceae
81.	*Ipomoea staphylina*	Convolvulaceae
82.	*Ixora coccinea*	Rubiaceae
83.	*Justicia adhatoda*	Acanthaceae
84.	*Justicia tranquebariensis*	Acanthaceae
85.	*Kyllinga triceps*	Cyperaceae
86.	*Lantana camara*	Verbenaceae
87.	*Leucas aspera*	Lamiaceae
88.	*Malvastrum coromandelianum*	Malvaceae
89.	*Michelia champaca*	Magnoliaceae
90.	*Millingtonia hortensis*	Bignoniaceae
91.	*Mimosa pudica*	Mimosaceae

92.	*Mimusops elengi*	Sapotaceae
93.	*Morinda tinctoria*	Rubiaceae
94.	*Mukia maderaspatana*	Cucurbitaceae
95.	*Murdannia dimorpha*	Commelinaceae
96.	*Nerium indicum*	Apocynaceae
97.	*Ocimum basilicum*	Lamiaceae
98.	*Ocimum sanctum*	Lamiaceae
99.	*Oldenlandia umbellata*	Rubiaceae
100.	*Oxalis corniculata*	Oxalidaceae
101.	*Oxalis latifolia*	Oxalidaceae
102.	*Polyalthia longifolia*	Annonaceae
103.	*Parthenium hysterophorus*	Asteraceae
104.	*Passiflora foetida*	Passifloraceae
105.	*Pavonia zeylanica*	Malvaceae
106.	*Peltophorum ferrugineum*	Caesalpinaceae
107.	*Pergularia daemia*	Asclepidaceae
108.	*Peristrophe bicalyculata*	Acanthaceae
109.	*Perotis indica*	Poaceae
110.	*Phyllanthus amarus*	Euphorbiaceae
111.	*Phyllanthus maderaspatensis*	Euphorbiaceae
112.	*Physalis minima*	Solanaceae
113.	*Plumeria rubra*	Apocynaceae

114.	*Plumeria alba*	Apocynaceae
115.	*Polygala bulbothrix*	Polygalaceae
116.	*Pongamia pinnata*	Fabaceae
117.	*Portulaca pilosa*	Portulacaceae
118.	*Prosopis spicigera*	Mimosaceae
119.	*Prosopis glandulosa*	Mimosaceae
120.	*Quisqualis indica*	Mimosaceae
121.	*Rauvolfia tetraphylla*	Apocynaceae
122.	*Rhynchosia minima*	Fabaceae
123.	*Ruellia tuberosa*	Acanthaceae
124.	*Samanea saman*	Mimosaceae
125.	*Sida acuta*	Malvaceae
126.	*Sida cordifolia*	Malvaceae
127.	*Solanum nigrum*	Solanaceae
128.	*Solanum trilobatum*	Solanaceae
129.	*Spathodea campanulata*	Bignoniaceae
130.	*Spermacoce hispida*	Rubiaceae
131.	*Sporobolus coromundelianus*	Poaceae
132.	*Swietenia macrophylla*	Meliaceae
133.	*Tabernaemontana divaricata*	Apocynaceae
134.	*Talinum portulacifolium*	Portulacaceae
135.	*Tecoma stans*	Bignoniaceae

136.	*Tephrosia procumbens*	Fabaceae
137.	*Tephrosia purpurea*	Fabaceae
138.	*Thespesia populnea*	Malvaceae
139.	*Thunbergia grandiflora*	Acanthaceae
140.	*Tinospora cordifolia*	Menispermaceae
141.	*Trianthema portulacastrum*	Aizoaceae
142.	*Tribulus terrestris*	Zygophyllaceae
143.	*Trichodesma indicum*	Boraginaceae
144.	*Tridax procumbens*	Asteraceae
145.	*Vernonia cinerea*	Asteraceae
146.	*Vitex negundo*	Verbenaceae
147.	*Waltheria indica*	Sterculiaceae
148.	*Wedelia chinensis*	Asteraceae

Fauna

Since the campus is having a high degree of green cover mainly due to trees, many number of avian fauna inhabit the institution. In addition, reptiles and rodents are also common on campus. Grains and water are also provided to the birds and other wild species by the students of biodiversity conservation interest. Some of the common fauna available on the college campus are given below.

List of the Avifauna of Kongunadu Arts and Science College (2022-2023)

Family Ardeidae (Herons, Egrets & Bitterns)		**Conservation Status**
1. Cattle Egret	*Bubulcus ibis*	R
2. Indian Pond-Heron	*Ardeola grayii*	R
Family Accipitridae (Hawks, Eagles, Buzzards, Old World Vultures, Kites, Harriers)		
3. Shikra	*Accipiter badius*	R
4. Brahminy Kite	*Haliastur Indus*	R
Family Phasianidae (Pheasants, Partridges, Quails)		
5. Grey Francolin	*Francolinus pondicerianus*	R
6. Indian Peafowl	*Pavo cristatus*	R
Family Rallidae (Rails, Crakes, Moorhens, Coots)		
7. White-breasted Waterhen	*Amaurornis phoenicurus*	R
Family Charadriidae (Plovers, Dotterels, Lapwings)		
8. Red-wattled Lapwing	*Vanellus indicus*	R
Family Columbidae (Pigeons & Doves)		
9. Rock Pigeon (Blue Rock Pigeon)	*Columba livia*	R
10.Laughing Dove (Little Brown Dove)	*Streptopelia senegalensis*	R
Family Psittacidae (Parakeets)		
11.Rose-ringed Parakeet	*Psittacula krameri*	R
Family Cuculidae (Cuckoos, Malkohas & Coucals)		
12.Pied Cuckoo (Jacobin Cuckoo)	*Clamator jacobinus*	WV
13.Asian Koel	*Eudynamys scolopacea*	R

14.Greater Coucal	*Centropus sinensis*	R
15. Common hawk-cuckoo	*Hierococcyx varius*	R

Family Tytonidae (Barn Owls)

16. Barn Owl	*Tyto alba*	R

Family Strigidae (Owls) *Athene brama* *R*
17. Spotted Owlet

Family Apodidae (Swifts) *Apus affinis* *R*
18. House Swift

Family Alcedinidae (Kingfishers)

19.White-throated Kingfisher (White-breasted Kingfisher)	*Halcyon smyrnensis*	*R*

Family Meropidae (Bee-eaters)

20.Green Bee-eater (Small Bee-eater)	*Merops orientalis*	*R*

Family Coraciidae (Rollers)

21.Indian Roller	*Coracias benghalensis*	R

Family Capitonidae (Barbets)

22.Coppersmith Barbet	*Megalaima haemacephala*	R

Family Picidae (Woodpeckers)

23.Black-rumped Flameback (Lesser Golden-backed Woodpecker),	*Dinopium benghalense*	R

Family Hirundinidae (Swallows & Martins)

24.Barn Swallow (Common Swallow)	*Hirundo rustica*	WV
25.Red-rumped Swallow	*Hirundo daurica*	R

Family Motacillidae (Wagtails & Pipits)

26.White-browed Wagtail (Large Pied Wagtail)	*Motacilla maderaspatensis*	WV

Family Pycnonotidae (Bulbuls & Finchbills)

27.Red-vented Bulbul	*Pycnonotus cafer*	R

Family Turdinae (Thrushes, Shortwings, Robins, Forktails, Wheaters)

28. Oriental Magpie-Robin	*Copsychus saularis*	R
29. Indian Robin	*Saxicoloides fulicata*	R
30. Pied Bushchat	*Saxicola caprata*	R

Family Timaliinae (Babblers, Laughingthrushes, Babaxes, Barwings, Yuhinas)

31. Jungle Babbler	*Turdoides striatus*	R

Family Sylviinae (Goldcrest, Prinias, Tesias, Warblers)

32.Plain Prinia	*Prinia inornata*	R

Family Dicaeidae (Flowerpeckers)

33.Pale-billed Flowerpecker (Tickell's Flowerpecker)	*Dicaeum erythrorhynchos*	WV

Family Nectariniidae (Sunbirds & Spiderhunters)

34.Purple Sunbird	*Nectarinia asiatica*	R
35.Loten's Sunbird	*Cinnyris lotenius*	R

Family Estrildidae (Munias (Estrildid Finches))

36.Indian Silverbill (White-throated Munia)	*Lonchura malabarica*	R

Family Passerinae (Sparrows)

37.House Sparrow	*Passer domesticus*	R

Family Sturnidae (Starlings & Mynas)

38.Common Myna	*Acridotheres tristis*	R

Family Oriolidae (Orioles)

39.Eurasian Golden Oriole	*Oriolus oriolus*	R

Family Dicruridae (Drongos)

40.Black Drongo	*Dicrurus macrocercus*	R

Family Artamidae (Woodswallows/Swallow-Shrikes)

41.Ashy Woodswallow	*Artamus fuscus*	WV

Family Corvidae (Crows, Jays, Treepies, Magpies)

42. Rufous Treepie (Indian Treepie)	*Dendrocitta vagabunda*	R
43. House Crow	*Corvus splendens*	R
44. Large-billed Crow (Jungle Crow)	*Corvus macrorhynchos*	R

Note: Old name of the species given in a bracket

Terms used to indicate status:

NT - Near threatened

Vul - Vulnerable

CD - Conservation Dependent

R - Resident

WV - Winter Visitor

List of butterflies identified in the college campus (2022-2023)

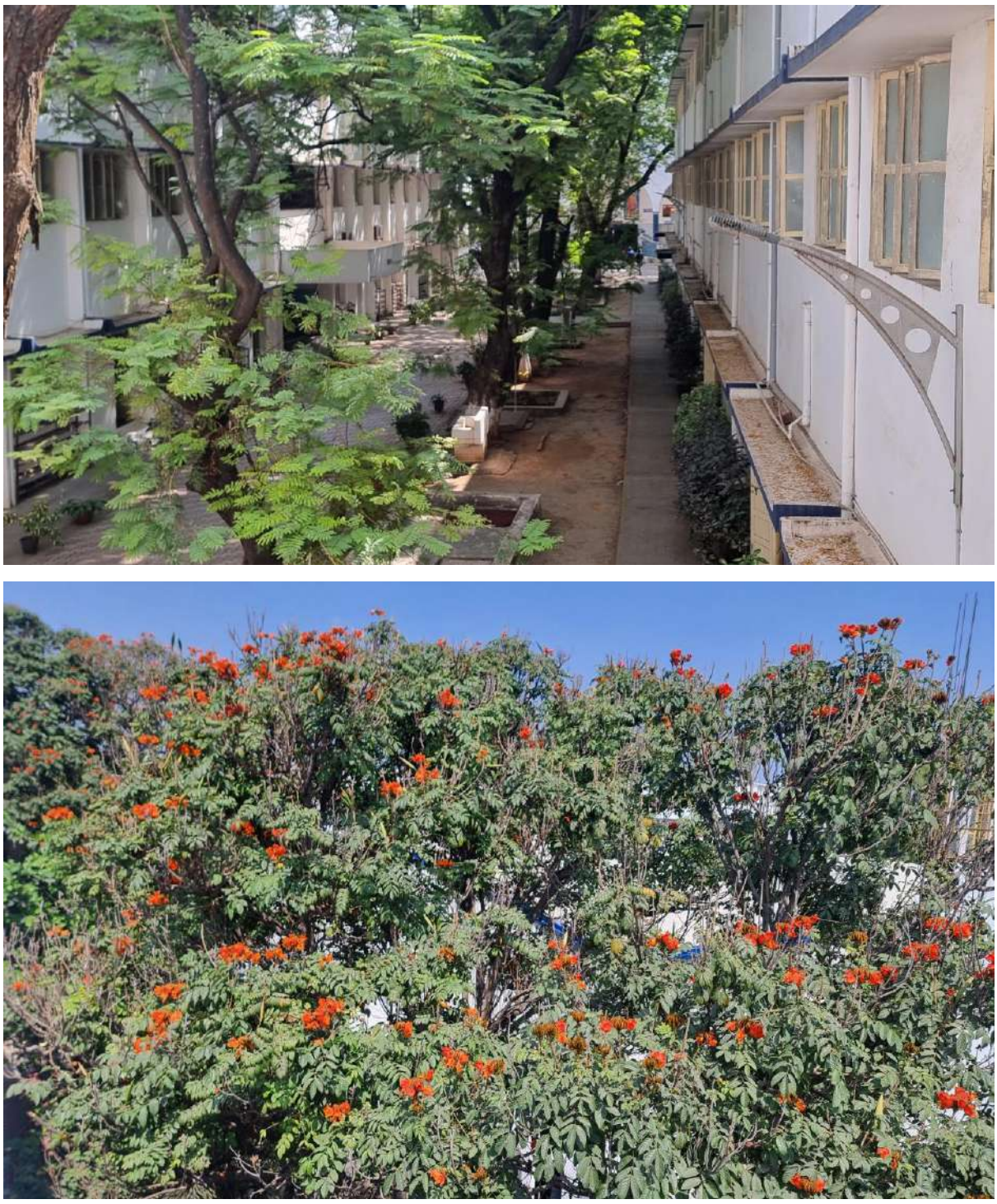
Family	S. No.	Scientific Name
Papilionidae	1.	Common Rose (*Pachliopta aristolochiae*)
	2.	Crimson Rose (*Pachliopta hector*)
	3.	Common Mormon (*Papilio polytes*)
	4.	Blue Mormon (*Papilio polymnestor*)
	5.	Lime Butterfly (*Papilio demoleus*)
Pieridae	6.	Common Grass Yellow (*Eurema hecabe*)
	7.	Common Emigrant (*Catopsilia pomona*)
Nymphalidae	8.	Plain Tiger (*Danaus chrysippus*)
	9.	Common Crow (*Euploea core*)
	10.	Common Evening Brown (*Melanitis leda*)
	11.	Common Sailor (*Neptis hylas*)
	12.	Common Castor (*Ariadne merione*)
	13.	Blue Pansy (*Junonia orithya*)
	14.	Chocolate Pansy (*Junonia iphita*)
	15.	Danaid Eggfly (*Hypolimnas misippus*)
Lycaenidae	16.	Common Cerulean (*Jamides celeno*)
	17.	Tiny Grass Blue (*Zizula hylax*)
	18.	Gram Blue (*Euchrysops cnejus*)
	19.	Plains Cupid (*Luthrodes pandava*)
	20.	African Babul Blue *(Azanus jesous*)
Hesperiidae	21.	Grass Demon (*Udaspes folus*)
	22.	Common Red Eye (*Matapa aria*)
	23.	*Parnara sp*

List of spider species identified in the college campus

S. No.	Scientific Name	Common Name	Family
1.	*Argiope pulchella*	Garden cross spider	Araneidae
2.	*Argiope* sp.	Signature spider	
3.	*Cyrtophora cicatrosa*	Garden tent spider	
4.	*Gasteracantha geminata*	Garden spiny spider	
5.	*Neoscona mukerjei*	Common garden orb-weaver	
6.	*Hersilia savignyi*	Two- tailed spider	Hersiliidae
7.	*Lycosa* sp.	Soil lycosid spider	Lycosidae
8.	*Oxyopes lineatipes*	Lined lynx spider	Oxyopidae
9.	*Oxyopes shweta*	White lynx spider	
10.	*Oxyopes sunandae*	Orange lynx spider	
11.	*Crossopriza lyoni*	Box spider	Pholicidae
12.	*Pholcus phalangioides*	Long bodied cellar spider	
13.	*Hyllus semicupreus*	Heavy-bodied jumper	Salticidae
14.	*Plexippus petersi*	Small zebra jumper	
15.	*Plexippus* sp.	Jumping spider	
16.	*Telamonia dimidiata*	Two-striped jumper	
17.	*Heteropoda venatoria*	Common house spider	Sparassidae
18.	*Argyrodes* sp.	Dew drop spider	Theridiidae
19.	*Theridion manjithar*	Common comb footed spider	

Green cover

It is assessed that tentatively 38% of the geographical area of the campus was occupied by the green cover of the tree species. It is well beyond the standard prescribed by the Indian forest policy, 33%.



The green cover in the college campus

Rain water harvesting

All over the campus at eleven different places, rainwater harvesting units each with the size of 12’ x 8’ x 10’ for rooftop water harvesting. As per the

information of the college administration, it is known that for the students and staff members and laboratory usage, the bore well situated in the college provided the complete supply of water. No amount of water was purchased for this purpose. However, before the construction of the rainwater harvest unit to meet the demand, an average of 20,000 liters of water was purchased every day. Apart from the rainwater harvest unit, the surface water during rainy days was permitted to percolate in the soil to augment groundwater to the maximum extent. This is mainly due to the non-sealing of the earth's surface by the tiles, cement concretes, etc. wherever it is possible.

The rain water harvesting unit

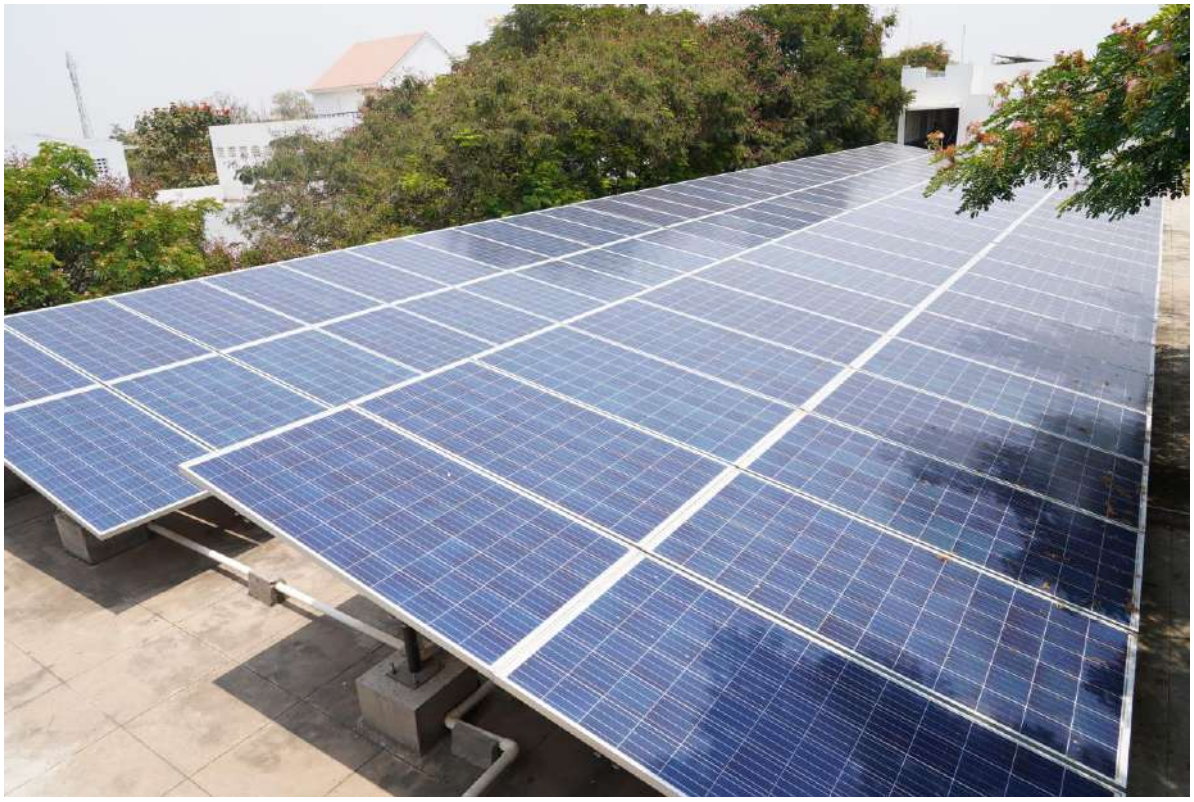
Solar Energy

Solar energy production is the approach toward green energy. Thus it reduces pollution hazardous in general and the college environment in particular. Solar energy can be used for different purposes like water heating, laboratory

uses, lighting bulbs, etc. A solar panel with a capacity of 150 KW was installed within the campus in January 2017. The power production for the institution use was about 500 units per day during the summer season.

Total energy consumption by solar panels in 2022 – 2023

Solar panel	Units
100 KW	82,086
50 KW	29,800
Total	**1,11,886**



Solar roof panels in the college campus

Inter and Intranet communications

An intranet facility was created for communicating the circulars and other information to staff members, scholars, and students. This was reducing the stationery usage like papers considerably within the campus.

Light-emitting diode (LED) lights

LED lights can reduce energy usage by about 80% as compared with fluorescent and incandescent lights. Hence, tube lights and other CFL bulbs have been replaced with LEDs on our college campus. So far, a total LED lighting load of 21,100 KW has been used (like street lights, classroom lights and focus lights).

Installation of LED lights

LED lights	Quantity (No.)	Watt	Total Watt
Street lights	30	40	1,200
Class room and Hostels	980	20	19,600
Focus	6	50	300
Total lighting load			**21,100**

Vermicomposting

Vermicomposting is the eco-friendliest recycling process to reduce organic waste. This recycling process converts organic debris into high-quality compost and makes the nutrients easily available to the plants. Vermicomposting is essentially the decomposition of organic materials by earthworms. The solid biodegradable waste generated on our college campus

has been used for the vermicomposting purpose. The step requires about 45 days for completing vermicomposting. At present, our college management has installed two vermicomposting units and the Department of Zoology has been maintaining these units. The final product is used for gardening purposes within the college campus.

The vermicomposting unit in the college campus

Greenhouse

Greenhouse is designed for the protection of tender plants against excessive cold or heat. Recently, our college constructed a greenhouse (4' x 5') for protecting some important ornamental and medicinal plants from the heat. Botany, Biochemistry and Biotechnology departments have been using the greenhouse facility for research and nursery purposes.

The greenhouse facility in our college campus

E-waste management

Our college signed a MoU with Green Era Recyclers, Coimbatore for recycling E-waste. During 2022 – 2023, about 650 kg of E-waste was collected from our college. This E-waste will be recycled and disposed of a scientific and environmentally friendly manner.

Suggestions and Recommendations

1. Improve the nursery by growing more number of native plants.
2. More LED lights should be installed to reduce power consumption for lighting.
3. Organize awareness programs on water conservation.
4. A wastewater treatment plant should be installed to recycle and reuse the water used for domestic purposes.

Signature of the committee members

S. No.	Committee members	Signature
1.	**Dr. S. Paulsamy** Dean R & D, Kongunadu Arts and Science College, Coimbatore – 641029, Tamil Nadu	
2.	**Dr. K. Thenmozhi** Assistant Professor and Head Department of Botany, Kongunadu Arts and Science College, Coimbatore – 641029, Tamil Nadu	
3.	**Dr. D. Moorthy** Assistant Professor, Department of Botany, Kongunadu Arts and Science College, Coimbatore – 641029, Tamil Nadu	

4.	**Dr. R. Venkitachalam** Assistant Professor, Department of Zoology, Kongunadu Arts and Science College, Coimbatore – 641029, Tamil Nadu	
5.	**Dr. K. Sowndhararajan** Assistant Professor, Department of Botany, Kongunadu Arts and Science College, Coimbatore – 641029, Tamil Nadu	