# A GREEN & ENVIRONMENTAL AUDIT REPORT

2021-22



# MAHARAJA AGRASEN INTERNATIONAL COLLEGE, SAMTA COLONY, RAIPUR CHHATTISGARH

# MAHARAJA AGRASEN INTERNATIONAL COLLEGE, RAIPUR

#### **A REPORT**

#### ON

### **GREEN & ENVIRONMENTAL AUDIT**

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#### **Submitted By:**

Nature Conservation and Community Development Society, Raipur, C. G.



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Ref. N CCD S/40/11/22

Date .25/11/22

# **CERTIFICATE**

This is to certify that Green and Environmental Audit for Maharaja Agrasen International College, Raipur, have been conducted in the year 2021-22 by Nature Conservation and Community Development Society, Raipur, C.G. As per the parameters of environmental and green audit the team of NCCDS visited the college campus and observations taken. At the time of audit all the required information's were provided by the principal, faculties and staff of the college. All the observations and photographs used in the report are original.

Hereby, the Audit and Environmental Report are being submitted to the Principal, Maharaja Agrasen International College, Raipur.

(President)

Date: 25/011/2022

Nature Conservation and Community

Development Society Chhattisgarb

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#### 1. INTRODUCTION:

The environment is our shelter house where we live within are of utmost concern since it is directly related to the survival. Keeping it not only healthy but also attention of is the responsibility of each and every individual. After Earth Summit Rio 1992, the concept of environmental audit was accepted by many countries. Some of the practices like renewable energy, composting, use of CFL are followed by 60%, 50% and 30% of the institutes respectively. Sewage treatment plants are opted by only 20% institutes. It is found that there is meager data available regarding the environmental practices undertaken by the academic institutes. Such data may help in deciding the simple policies to be adapted by the institutes towards a sustainable environment.

#### 2. THE GREEN & ENVIRONMENTAL AUDIT

Green & Environmental Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of an institute. It aims to analyze environmental practices within the concerned place, which will have an impact on the eco-friendly atmosphere. Green and Environmental audit is a valuable means for an institution to determine how and where they are using the most energy or water or other resources; the institution can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact and awareness for environment protection on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the institution evaluate its own contributions toward a sustainable future. As an environmental sustainability is becoming an increasingly

important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO<sub>2</sub> from the environment.

Green & Environmental Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of various establishments. It aims to analyze environmental practices within and outside of the concerned sites, which will have an impact on the eco-friendly ambience.

Green & Environmental audit can be a useful tool for an institution to determine how and where they are using the most energy or water or resources; the institution can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for

sustainable development and at the same time reduce a sizable amount of atmospheric carbon-di-oxide from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green and Environmental Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

Therefore, the purpose of the present Green & Environmental audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

#### 3. **OBJECTIVES:**

The purpose of the present Green and Environmental audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green and Environmental Audit are:

- > To map the Geographical Location of the institution
- > To document the floral and faunal diversity of the institution
- > To record the meteorological parameter
- > To document the waste disposal system
- > To estimate the Energy requirements of the campus
- > To encourage various steps towards awareness for environmental protection among the students and staff of the institution

#### 4. **METHODOLOGY:**

The purpose of the green and Environmental audit is to ensure that the practices followed in the campus are in accordance with the Green and Environmental Policy of the country. The methodology includes: collection of data, physical inspection of the campus, observation and review of the documentation and data analysis.

#### 5. THE COLLEGE CAMPUS:

Maharaja Agrasen International College (MAIC) is affiliated to Pandit Ravishankar Shukla University, Raipur, Chhattisgarh located in the center of the city in Samta Colony established by the Maharaja Agrasen Charitable Trust in 2006. The college has evolved into one of the premier institutions of the Chhattisgarh with a National Assessment and Accreditation Council (NAAC) with B+ grade. The college sprawling over an area of 2 acre land is located near Shree Ramnath Bhimsen Marg in Raipur at 21°24' N lat. and 81°.62' E long. The area is plain with lateritic black soil.



#### 5.1 Climate of the area:

Climate of the area is typical monsoonic, divisible in to three seasons in a year, almost of equal duration. Summer season starts in March goes up to June, rainy season extends from about mid-June to October while the winter season, starting from November ends to February. Summer season is dry and very hot, maximum temperature very often crosses 45°C. The season is much testing to the survival of the plants. Rainy season also is generally hot, almost 90% of the rain is received during this season. The soil becomes over flooded with low to very amount of soil erosion. Very little amount of this water infiltrates as ground water. The winter season has mild cold with minimum temperate rarely going below 10°C. As representative climatic data for Raipur is being given below for one year. During the audit Concentration in Ambient Air quality in campus and around the area were recorded AQI (Air Quality Index) Value was less than 50 which is considerable safe.

Table 1. Mean monthly weather data of Raipur (C.G.), year – 2021

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	20 °C	23.6 °C	28 °C	32.6 °C	35.1 °C	31.1 °C	26.8 °C	28.3 °C	26.7 °C	25.6 °C	22.7 °C	20 °C
	(67.9) °F	(74.4) °F	(82.4) °F	(90.6) °F	(95.2) °F	(88) °F	(80.2) °F	(79.3) °F	(80) °F	(78.1) °F	(72.9) °F	(68.1) °F
Min. Temperature °C (°F)	13.3 °C	16.7 °C	20.7 °C	25.4 °C	28.7 °C	27.2 °C	24.6 °C	24.1 °C	23.8 °C	21.2 °C	17.1 °C	13.8 °C
	(56) °F	(62) °F	(69.2) °F	(77.7) °F	(83.7) °F	(81) °F	(76.2) °F	(75.5) °F	(74.8) °F	(70.2) °F	(62.7) °F	(56.8) °F
Max. Temperature °C	28.7 °C	30.3 °C	34.9 °C	39.3 °C	41.2 °C	35.7 °C	29.8 °C	29.4 °C	30.4 °C	30.4 °C	28.6 °C	26.5 °C
(°F)	(80) °F	(86.6) °F	(94.7) °F	(102.7) °F	(108.2) °F	(96.3) °F	(85.7) °F	(84.8) °F	(88.7) °F	(86.8) °F	(83.5) °F	(79.7) °F
Precipitation / Rainfall	15	11	12	16	22	213	398	379	241	69	13	12
mm (in)	(0)	(0)	(0)	(0)	(0)	(8)	(15)	(14)	(9)	(2)	(0)	(0)
Humidity(%)	53%	46%	35%	29%	29%	55%	81%	84%	81%	70%	61%	57%
Rainy days (d)	1	2	2	3	3	13	19	19	14	6	1	1
avg. Sun hours (hours)	9.4	10.0	10.7	11.3	11.8	10.5	7.7	7.0	8.2	9.2	9.5	9.5

Data: 1991 - 2021 Min. Temperature °C (°F), Max. Temperature °C (°F), Precipitation / Rainfall mm (in), Humidity, Rainy days. Data: 1999 - 2019: avg. Sun hours

#### 6. VEGETATION:

Vegetation in the campus consists of both the natural vegetation and planted vegetation. Overall the vegetation can be divided in to trees and other vegetation:

#### **6.1.** Trees:

Tree vegetation includes avenue tree like Royal palm, Chhatim, Kachnar, Peltaphorum, Amaltas, Gulmohar, Karanj. Medicinally important trees include Bel, Neem, Amla. Fruit trees include Sitaphal, Papita, Aam. Guawa planted in the campus. Covering the campus with greenery and it is helping substantially in contributing oxygen in the campus.

Table 2: List of trees in the campus

S.N.	Botanical name	Common Name	Family	
1.	Aegle marmelos L.	Bel	Rutaceae	
2.	Alstonia scholaris L.	Chhatim	Apocynaceae	
3.	Annona squamosa L.	Sitaphal	Annonaceae	
4.	Azadirachta indica A.Juss	Neem	Meliaceae	
5.	Bauhinia purpurea L.	Kachnar	Leguminosae	
6.	Carica papaya L.	Papita	Caricaceae	
7.	Cassia fistula L.	Amaltas	Leguminosae	
8.	Delonix regia Raf.	Gulmohar	Leguminosae	
9.	Eucalyptus lanceolatus L.	Nilgiri	Myrtaceae	
10.	Ficus benghalensis L. var. krishnae	Bargad	Moraceae	
11.	Ficus religiosa L.	Peepal	Moraceae	

12.	Lagerstroemia speciosa	Jharul	Lythraceae
13.	Mangifera indica L.	Aam	Anacardiace
14.	Nyctanthes arbor-tristis L.	Parijat	Oleaceae
15.	Peltophorum ferrugineum Benth.	Peela gulmohar	Caesalpiniaceae
16.	Phyllanthus emblica L.	Amla	Euphorbiaceae
17.	Pongamia pinnata L.	Karanj	Fabaceae
18.	Roystonea regia	Royal palm	Arecacea
19.	Semaruba glauca DC.	Laxmitru	Semarubaceae
20.	Vachellia nilotica F.	Babool	Mimosaceae
21.	Caryota urens	Tadi Palm	Palmaceae

#### **6.2** Vegetation other than trees:

These groups of plants include the shrubs, climbers and herbs. Shrub like Bouganvelia, been planted along the campus, giving beautiful look in flowering. Mass plantation of Palm have been planted which are giving beautiful landscaping outlook of the campus. Apart from ornamental plants some of seasonal vegetation is growing in wasteland, contributing oxygen during growing season and a huge amount of biomass.

Table 3: List of non-tree plants

SN	Species			
1.	Acanthospermum hispidum			
2.	Andrographis paniculata			
3.	Achyranthes aspera			
4.	Ageratum conyzoides			
5.	Alysicarpus vaginalis			
6.	Aristida sp.			

7.	Atylosia scarabaeoides				
8.	Blumea lacera				
9.	Blumea oxyodonta				
10.	Bothriochloa pertusa				
11.	Cassia mimosoides				
12.	Cassia tora				
13.	Chorcorus olitorius				
14.	Chrysopogon fulvus				
15.	Curculigo orchioides				
16.	Cynodon dactylon				
17.	Cyperus sp.				
18.	Dactyloctenium aegyptium				
19.	Desmodium gangeticum				
20.	Desmodium triflorum				
21.	Digitaria sp.				
22.	Dolichos sp				
23.	Emilia sonchifolia				
24.	Eragrostis nutans				
25.	Eragrostis unioloides				
26.	Eragrostis viscose				
27.	Eulaliopsis sp.				
28.	Euphorbia hirta				
29.	Evolvulus alsinoides				
30.	Evolvulus nummularius				
31.	Hemidesmus indicus				
32.	Heteropogon contortus				
33.	Ionidium suffruticosum				
34.	Ipomoea carnea				
35.	Isilema laxum				
36.	Justicia simplex				
37.	Nerium oleander				
38.	Oldenlandia corymbosa				
39.	Oldenlandia sp.				
1					

40.	Oplismanus burmanii				
41.	Paspalidium flavidum				
42.	Phyllanthus amarus				
43.	Phyllanthus madaraspatana				
44.	Plectranthus incanus				
45.	Rungia repens				
46.	Salvia sp.				
47.	Setaria glauca				
48.	Sida acuta				
49.	Sida cordata				
50.	Sida cordifolia				
51.	Sida rhomboidea				
52.	Solanum nigrum				
53.	Solanum surattense				
54.	Sporobolus diander				
55.	Tridax procumbens				
56.	Triumphetta annua				
57.	Vandelia brachteata				
58.	Vandelia crustacia				
59.	Vernonia cineria				
60.	Xanthiumstrumerium				
61.	Zornia gibbosa				
62.	Ixora parviflora				
L					

#### 7. ANIMALS:

Animals in the area include Mammals, Birds, Reptiles, Amphibia, Butterflies, Dragon flies and a large variety of other insects.

#### **7.1.** Birds

A large variety of bird are visible in the area, some of them are resident birds while some others are seasonal birds. However, it requires special effort to see the birds as most of them are very shy, flying away from human beings, some of them stop for a very short time, flying away to other areas while some others remain hidden within the vegetation.

Table 5: List of Birds

S.N.I	Local Name English Name	S		atus D4
			edule 	Part
1.	Common myna	Acridotheris tristis	IV	
2.	Little Green Bee-Eater	Merops orientalis	IV	
3.	Koel, Cuckoo	Eudynamys scolopaicea	IV	
4.	Jangali Tota	Taccocua leschenaultia	IV	
5.	Bater (Grey Quail)	Coturnix coturnix	IV	
6.	Basanti (Indian cuckoo)	Cuculus micropterus	IV	
7.	Kite	Milvus migrans	IV	
8.	Indian Robbin	Saxicoloides fulicata	IV	
9.	Redwhiskered bulbul	Pycnonotus cafer	IV	
10.	Bater (Grey Quail)	Coturnix coturnix	IV	
11.	Owl	Bubo bubo	IV	
12.	Blue rock pigeon	Columba livia	IV	
13.	House crow	Corvus splendens	V	
14.	House sparrow	Passer domesticus	V	
Repti	iles:			

Table 6: List of Reptiles

S.N.Lo	ocal Name	English Name	Zoological Name	Status WL(I Act, 1972) Schedule	Protection Part
1.	Dhaman/Inc	dian Rat snake	Ptyas mucosus	II	II
2.	Dhondwa/W	Vater sanke	Enhydris enhydris	IV	
3.	Garden lizar	rd	Calotes versicolor	-	-
4.	Brahmini sk	kink	Mabuya carinata		

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#### 7.4 Amphibia

Table 7: List of Amphibia

S.N.	Local Name		Zoological Name
1.	Mendhak	Bull frog	Hoplobatrachus tigerinus
2.	Mendhak	Common toads	Duttaphrynus melanostictus
3.	Mendhak	Skipper frog	Euphlyctis cyanophlyctis
4.	Mendhak	Small frog	Microhyla ornata
5.	Mendhak	Tree frog	Polypedates maculatus
5.	Mendhak	Tree frog	Polypedates maculatus

#### 7.2. Butterflies

Many species of butterfly have been recorded from the area. Some of them have been identified as given below:

Table 8: List of Butterflies

SN	Species
1.	Acraea violae
2.	Eurema andersoni
3.	Eurema brigitta
4.	Eurema laeta
5.	Euthalia nais
6.	Gandeca harina
7.	Hypolimnas bolina
8.	Acraea violae
9.	Eurema laeta
10.	Euthalia nais

#### 7.5 Dragonflies

Table 9: List of Dragonflies

SN	Species	SN	Species
1.	Trithemis aurora	5.	Potamarcha congener
2.	Bradinopiga geminate	6.	Orthetrum pruinosum
3.	Diplacodes trivialis		
4.	Pantala flavescens		

#### 8. PLANTATION IN THE CAMPUS

Mass plantation programmes have been arranged frequently in the campus and outside of the campus, on the following dates:

- 1. 07<sup>th</sup> August 2021
- 2. 08th August 2021
- 3. 5<sup>th</sup> June 2021
- 4. 8th June 2021
- 5. 27<sup>th</sup> August 2019
- 6. 29th August 2019
- 7. 28th August 2019

Tree saplings, planted on these dates have either grown to be visible from a distance or are coming up to reach above the herbaceous growth and in coming years will take the shape of trees. However, the efforts of planting the area with trees will continue. More importance will be given to local tree species, as mentioned below:

- 1. Anthocephalus cadamba (Kadamb)
- 2. Azadirachta indica (Neem)
- 3. Dalbergia sissoo (Sisham)
- 4. Ficus bengalensis (Bargad)
- 5. Ficus religiosa (Peepal)

- 6. Kigelia pinnata
- 7. Lagerstroemia flos-reginae (Jharul)
- 8. *Mangifera indica* (Aam)
- 9. Phyllanthus emblica (Aonla)
- 10. Poinciana pulcherrima (Gulmohar)
- 11. Polyalthea longifolia (Ashok)
- 12. Samanea saman (Siris)
- 13. Saraca asoka (Sita ashok)
- 14. Tamarindus indica (Imli)
- 15. Tectona grandis (Teak)
- 16. Terminalia arjuna (Arjun)
- 17. Terminalia belirica (Beheda)

#### 9. WATER CONSERVATION IN THE CAMPUS:

Water is being conserved in the campus, most efficiently. Not a drop is being wasted. The most important step taken to prevent unnecessary loss of water is the installation of 'Automatic Water Level Controller' with each of the water tank. The controller sounds the alarm as soon as the water tank is filled so that the water supply to the tank is stopped. Waste water from the campus is used for irrigation. The water tanks maintain clean water, free from pollution. They are helpful in recharging the ground water to their nearby places. Rain water harvesting system has been installed in the campus.

#### 10. ENERGY EFFICIENCY:

All the electric bulb points are fitted with the LED bulbs consuming least amount of energy. Further a 50 KW capacity 'Grid Connected, Solar Power Plant' has been established. The solar power plant is not only fulfilling the electricity requirement of the campus of the College, but excess amount of solar power generated electricity is fed to the grid. Thus the college is functioning, almost entirely on renewable, green energy.



50 Kv capacity Solar energy power plant

#### RECOMMENDATIONS

A green & Environmental audit of an institution is the continued assessment of ecofriendly practices being adopted by the institution on greening the campus to enhance release of oxygen, booster carbon sequestration, increased dependence on renewable or green energy, efficient use of energy, efficient use and conservation of water, ecofriendly management of solid waste, proper management/disposal of liquid waste and provide congenial environment and habitat to wildlife, particularly the birds and butterflies. This has become essential in the present age due to rapid decline in the quality of environment. This can be achieved only with active participation of stakeholders, which should be achieved through running of awareness programmes, regularly. Some suggestions for cleaner environment in the College campus include:

- Environmental Statement Report on green practices followed by different departments should be prepared annually.
- Green audit report should be published in annual report of the college and will be uploaded in the college website.

- Awareness will be created among students, staff and public. This will be helpful to encourage students and employees towards sustainable utilization of available resources.
- Focus will be made to assess the consumption of energy, electricity, water as well as disposal of liquid and solid waste, hazardous waste and e-waste.
- Artificial pond should be created for birds specially for summer during water scarcity.
- Herbal garden will be established in the campus.
- Energy Audit will be conducted to check energy consumption.

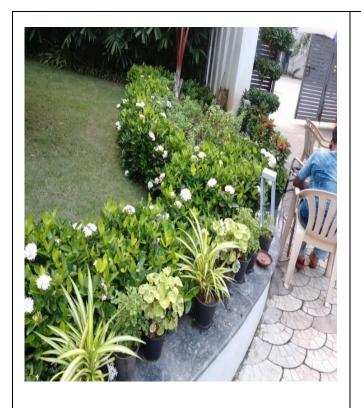
# Photographs' of the College Campus Covering Green zones, Vegetation, Animal Diversity, Solar Plant, Student awareness campaign.











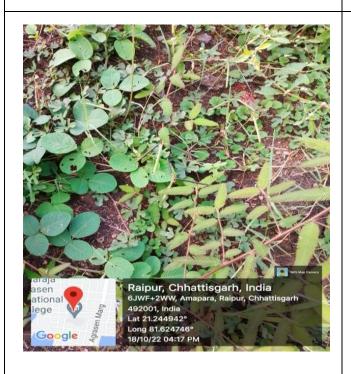
















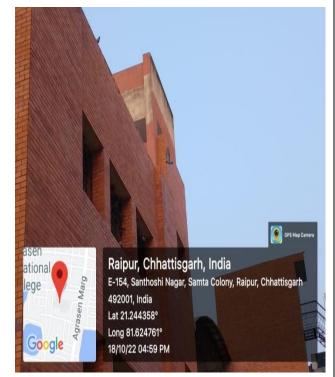








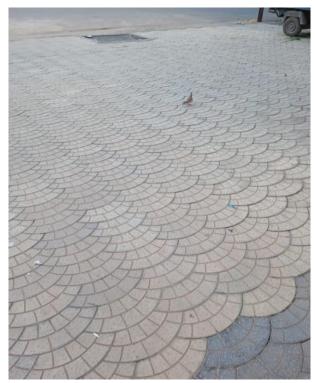
Owl







Lizard



Birds



Birds



Rain Water Harvesting









#### MAIC conducts plantation drive

MAHARAJA Agrasen International College (MAIC) organised a plantation drive by Rover Ranger teamat/Amleshwar village here on Saturday.

Rover crew and Ranger team of MAIC conducted the programme in which Rover and Ranger students went to Amleshwar village and planted sapling offruits bearing and shadow giving trees. Village Sanpanch and villages fook part in the plantation drive and large numbers of saplings were planted across the village. Rovers and Rangers created awareness through slogan and posterprepared by the students based on sanitation programme in and around village along with stress was on making them to follow COVID appropriate behavior. Maintaining personal hydrene is equal-by important for good health of the coordinator for the event was butch Sachan and campied event ivas such Sachan and campied or pignee.



Lal Patel. Event was organised under the leadership of Rajesh Agrawal, Chairman of MAIC and Dr Jyoti Janswamy.

The co-ordinator for the event was Ruchi Sachan and to ame leader Dr Digree HITAVAGA PAGE NO 02





MAIC Collaborates with Green Army MAIC Unites with Green Army For Environmental Causes

Maharaja Agrasen International College Samta Colony, Raipur runs the various courses like BBA, B.Com, B.Sc(Computer Science) BCA, D.El.Ed. College collaborated with Green Army. Green Army is the organization which works for the conservation of environment and plantation are their major task. Green Army was started on 21<sup>st</sup> April, 2017. It is the task force by the public of Raipur. It's focus is to bring all environmental friendly people on a common platform, so jointly they can contribute for the betterment of the city.

This collaboration of college and Green Army will bring the wonderful opportunity for the college students and they can contribute towards the betterment of the city.

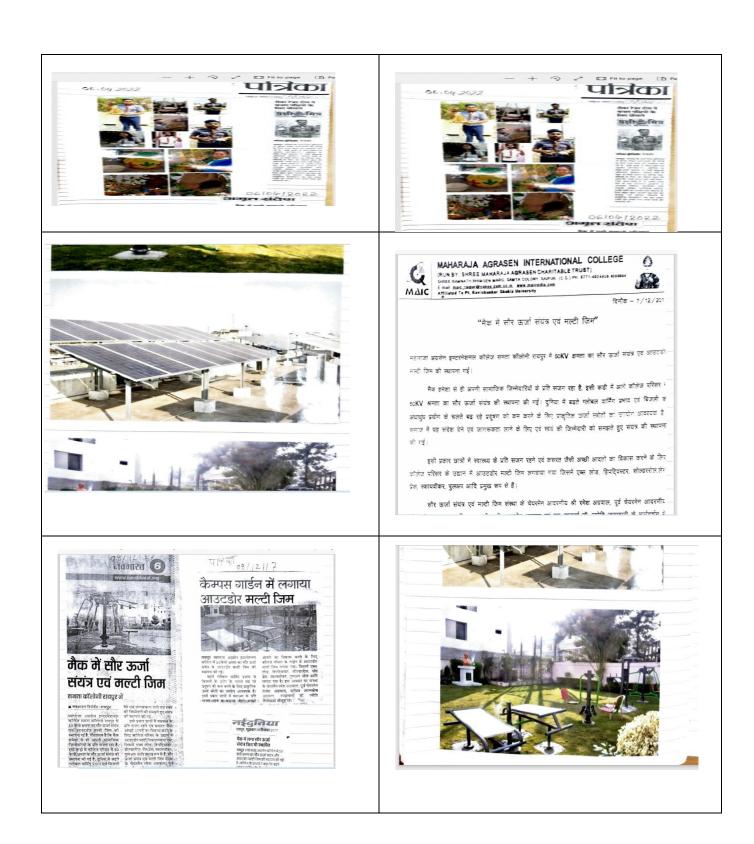
Green Army is committed to make Raipur as "Green city Raipur" as soon as possible. College students will now share thir contribution for this noble cause.

Students of MAIC will now work for the cleaner environment, water conservation and cleanliness in association with Green Army. Green Army organisation was established by Hon'ble Shri Amitabh dubey ji. This collaboration was done under the leadership of Hon'ble Shri Rajesh Agrawal ji (Chairman, MAIC) and Respected Dr. Jyoti Janswamy (Principal, MAIC)









**Environment & Nature Protection Awareness Programmes by the College**