

# **Sustainability Report 2025**

## **Format for the Presentation of Intuitional Best Practices**

### **1. Title of the Practices:**

- Use of Renewable Energy Resources (Solar Energy)
- Water Conservation Practices (Rain Water Harvesting System and Pond)
- Plantation Drives
- Nature Conservation

### **2. Objective of Practices:**

- To reduce dependency on non-renewable resources like coal based generated electricity
- To recharge the ground water level best practices of water conservation is adopted in all buildings as well as 04 ponds constructed by university.
- Guru Ghasidas Vishwavidyalaya has performed various plantation activities which includes the establishment of Fruit orchard area and Bamboo plantation unit in year 2021-22 and other plantations throughout the university campus. The primary objective of this plantations is to increase the tree diversity and green cover of the area for creating better environment.
- By using renewable energy, pond construction and plantation activities the flora and fauna diversity as well.

### **3. The context:**

Solar panel has been installed to reduce pressure on coal based power generating system and protecting environment for future generation. Estimated produced energy is surplus in the credit of university may be used as an income generating system. Solar panels has installed on the roof top of university buildings in the campus. Ponds were constructed on natural inlet location of the university. Rain water harvesting system has implemented on almost possible buildings. The context of plantation activities includes the upliftment of local environment by introducing more green cover to the area which can help in maintaining ecosystem services like water conservation, air regulation, pollution control as well as habitat availability to various species. Various resources will also be obtained through this plantation units. Nature conservation practice is indirectly fulfilled by above practices. Students also involve in nature conservation practices by the awareness program conducted by university.

### **4. The Practice**

**Solar Panel:** Guru Ghasidas Vishwavidyalaya took initiatives to reduce the energy consumption in the campus area. University has also taken steps to harness solar energy by installation of 2 MW roof top solar power plants. The university is promoting the uses of energy saving appliances in the university campus. The university uses more than 86 % energy efficient appliances. The total electricity usage of Guru Ghasidas Vishwavidyalaya Campus during 2021-2022 was 1429004 Kwh. The University utilizes the demanded electricity on research, lighting, cooling, laboratory appliances, and other digital appliances. In recent years, the university installed a renewable energy (solar panels) with annual production of 3010399.2 Kwh to meet increasing demand of energy for sustainable development.

**Rain water Harvesting System:** All buildings of the University have a separate sewerage system. Rain water is collected from the roofs of the buildings and then discharged into the underground tanks. The university has also buildings where all the rainwater is collected for toilet flushing and for watering the plants inside the building.

**Plantation Drive:** The plantation activities were practiced under various steps including the selection of site with better soil conditions, choice of suitable species according to areas. Plantation areas were properly fenced for protection measures and pits were made of suitable depth to support plants. Fruiting species like Bamboo, Chandan, Mango, Jamun, etc. were planted and fertilizers were applied with the soil. Regular irrigation practices were performed for obtaining better results. Similar planting practice was performed in the Bamboo plantation unit of campus to introduce variety of bamboo species for diversity management in the campus. Plantations have also been performed through the NSS students and some local NGOs in the university campus. Overall, about 8500 plants have been planted in recent years throughout the university campus. University has 291024.0135 m<sup>2</sup> (11%) area under plantation of various species such as *Peltophorum*, *Eucalyptus*, *Mango*, *Syzygium*, *Ficus*, *Pongamia*, *Cassia*, *Acacia*, *Bauhinia*, *Bamboo*, *Albizia*, *Embilica*, *Anthocephalus*, *Mimosa elengi*, *Terminalia arjuna*, *Azadirachta indica*, etc. established as Miyawaki and miscellaneous forests.

**Nature Conservation:** University Campus is located in sub urban area Bilaspur city, Chhattisgarh India having lush green forest cover more than 74 % (1954065.09 m<sup>2</sup>) forest area of its total terrestrial land. Campus has natural and man mad forest with floral and faunal diversity.

## 5. Evidence of Success

On roofs of Institute of Technology, Department of Pharmacy, Department of Chemistry, Central Library. Department of Bio- Technology, Department of Forestry and other teaching buildings and a power station of total 1.74MW is in the process of installation. Solar panel has been installed.

|                                                                                     |                                                                                      |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |
| <p>Roof top Solar Panels (Department of Forestry)<br/>22°07'36.2"N 82°08'21.4"E</p> | <p>Solar Street Lightings<br/>22°07'19.3"N 82°08'31.0"E</p>                          |

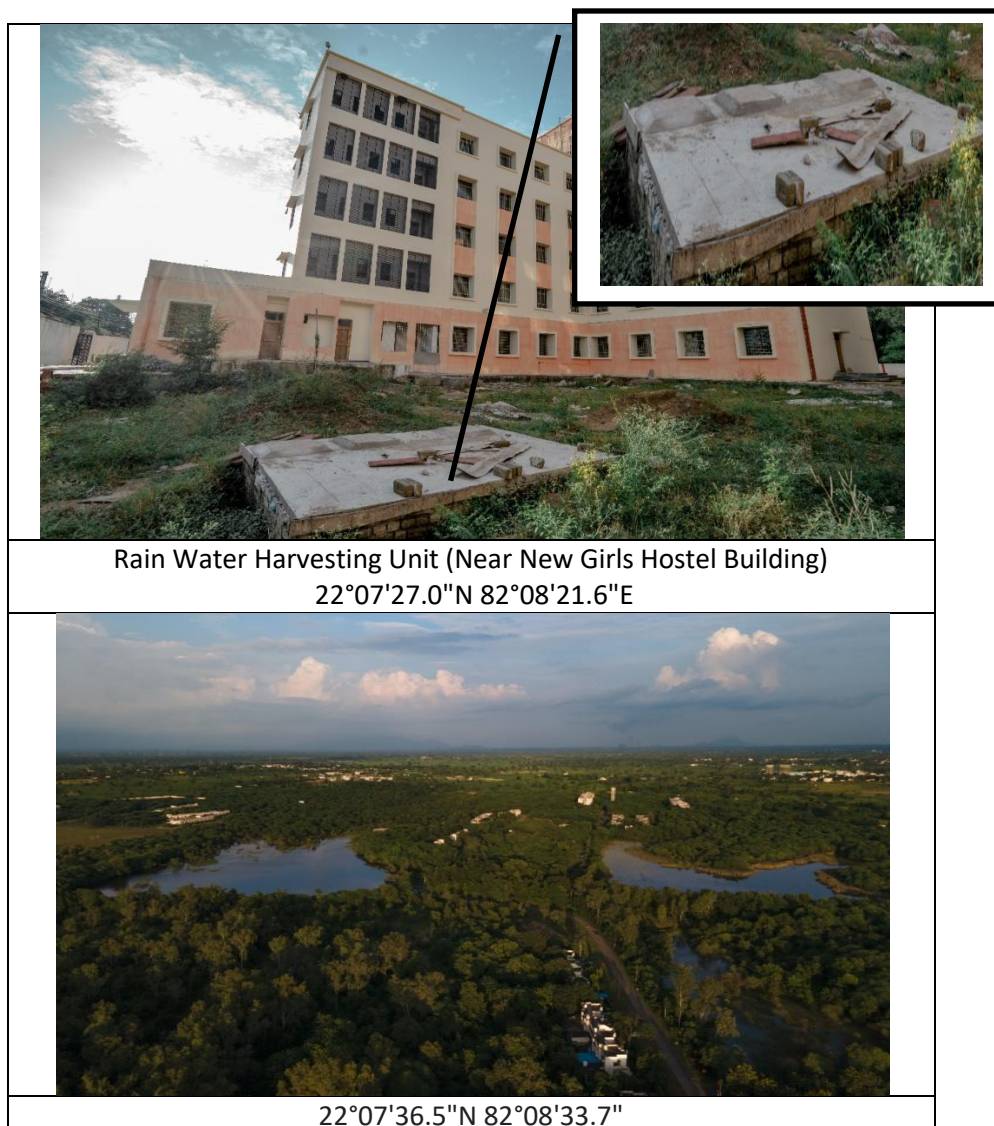
|                                                                                                          |                                                                                            |                                  |       |
|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------|-------|
|                         |          |                                  |       |
| <p>22°07'36.2"N 82°08'21.6"E</p> <p>Solar Roof Top Panels in Guru Ghasidas Vishwavidyalaya Buildings</p> | <p>22°07'36.2"N 82°08'21.4"E</p> <p>Roof Mounted Solar Panels (Department of Forestry)</p> |                                  |       |
| Ratio of renewable energy production divided by total energy usage per year                              |                                                                                            |                                  |       |
| S. No.                                                                                                   | Conventional energy usage (Kwh)                                                            | Renewable energy production(Kwh) | Ratio |
| 1                                                                                                        | 1429004                                                                                    | 3010399.2                        | 2.10  |

| Renewable energy sources at GGV Bilaspur campus                                      |                                                  |                                            |          |     |            |                                                                 |
|--------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------|----------|-----|------------|-----------------------------------------------------------------|
| S. No                                                                                | Items                                            | Location                                   | Capacity | Nos | Total watt | Production Capacity (Kwh per year)                              |
| 1.                                                                                   | Solar street light                               | Various Department, Parking, Street lights | 12W      | 70  | 840 W      | 3679.2                                                          |
| 2.                                                                                   | Roof top On-grid solar panel installed till date | Various Building                           | 2.00 MW  | 1   | 2.00 MW    | Roof top on-grid solar power plant (1.74MW AC)<br>=3006720 Kwh* |
| * 1.74 MW*1000*0.6 (60% generation capacity)*8 (hours)*30 Days*12 (Months)= Kwh/year |                                                  |                                            |          |     |            |                                                                 |
| Roof top On-grid solar panel 3006720+ Solar street light 3679.2=3010399.2 Kwh/year   |                                                  |                                            |          |     |            |                                                                 |

#### List of Rainwater Harvesting sites in GGV Bilaspur Campus

| S. No. | Location                    | Number |
|--------|-----------------------------|--------|
| 1      | Primary Health Centre       | 1      |
| 2      | Jawahar Sadan Guest House   | 1      |
| 3      | Rajmohini Devi Girls Hostel | 7      |
| 4      | Deptt of Biotechnology      | 2      |
| 5      | Deptt of Rural Technology   | 1      |

|    |                                  |           |
|----|----------------------------------|-----------|
| 6  | Forestry Hostel                  | 2         |
| 7  | Administrative Building          | 1         |
| 8  | Deptt of Pure & Applied Physics  | 2         |
| 9  | UTD (Wing 'A' & Wing 'B')        | 4         |
| 10 | Deptt of Pharmacy                | 1         |
| 11 | Institute of Technology Building | 1         |
| 12 | UGC HRDC Building                | 1         |
| 13 | Auditorium                       | 1         |
| 14 | Cafeteria                        | 1         |
|    | <b>Total</b>                     | <b>26</b> |





## Plantation Drive

Fruit Orchard developed in front of Education Department and Bamboo plantation unit developed behind the IT building. Other plantations were also done by the students of NSS and local NGOs in different parts of university campus.



Fruit Orchard Area



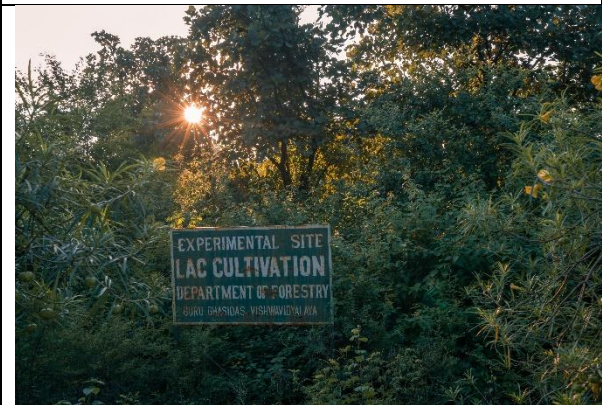
Bamboo Plantation Unit



Plantation by NSS students

Plantation by local NGO

**Nature Conservation:** Plant, animal, and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities:

|                                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |   |
| 22°07'33.4"N 82°08'18.3"E                                                                           | 22°07'35.4"N 82°08'15.8"E                                                           |
| Glass House                                                                                         | Forestry Nursery                                                                    |
|                   |  |
| 22°07'31.0"N 82°08'31.9"E                                                                           | 22°07'34.4"N 82°08'36.3"E                                                           |
| Lac Cultivation Unit                                                                                | Biodiversity Zone                                                                   |
| Medium - long-term conservation facilities at Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh |                                                                                     |

**Description:**

- Glass House for plant propagation
- Forestry Nursery
- Lac Cultivation Unit
- Biodiversity Zone

| Biodiversity            | No. of Species |
|-------------------------|----------------|
| Total tree species      | : 61           |
| Number of birds         | : 144          |
| Migratory birds species | : 64           |
| Snakes                  | : 17           |
| Lizards                 | : 03           |
| Amphibians species      | : More than 10 |

|                                     |                                                                                                                                                               |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mammals                             | : 10 (Golden jackal, Wild boar, Indian fox, Asian palm civet, Jungle cat, Indian hare, Indian grey mongoose, Grey langur, Indian palm squirrel and Fruit fox) |
| Butterfly, dragonfly and damselfly: | : More than 30 species                                                                                                                                        |



**Additional evidence link:**

<https://drive.google.com/file/d/13WHtZl3Nh8fBJpivsIAqK8yWvliULLdf/view?usp=drivesdk>

<https://drive.google.com/file/d/1EmkNbRR8bJOXEQPbeiCS9VbUZ9G4vNwQ/view?usp=drivesdk>

[ECO FRIENDLY GREEN CAMPUS MOBILE DEVICE.mp4 - Google Drive](#)

**6. Problems encountered and Resource required:**

- Execution of work need time to implement
- Financial budget
- The main problems encountered were availability of water for the growing plants throughout the year to reduce the failure percentage and fencing for protection purposes which had been resolved in coordination with the university.