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Article 3 :

Developing An Awareness Program On Energy Conservation & Renewable Energy Use

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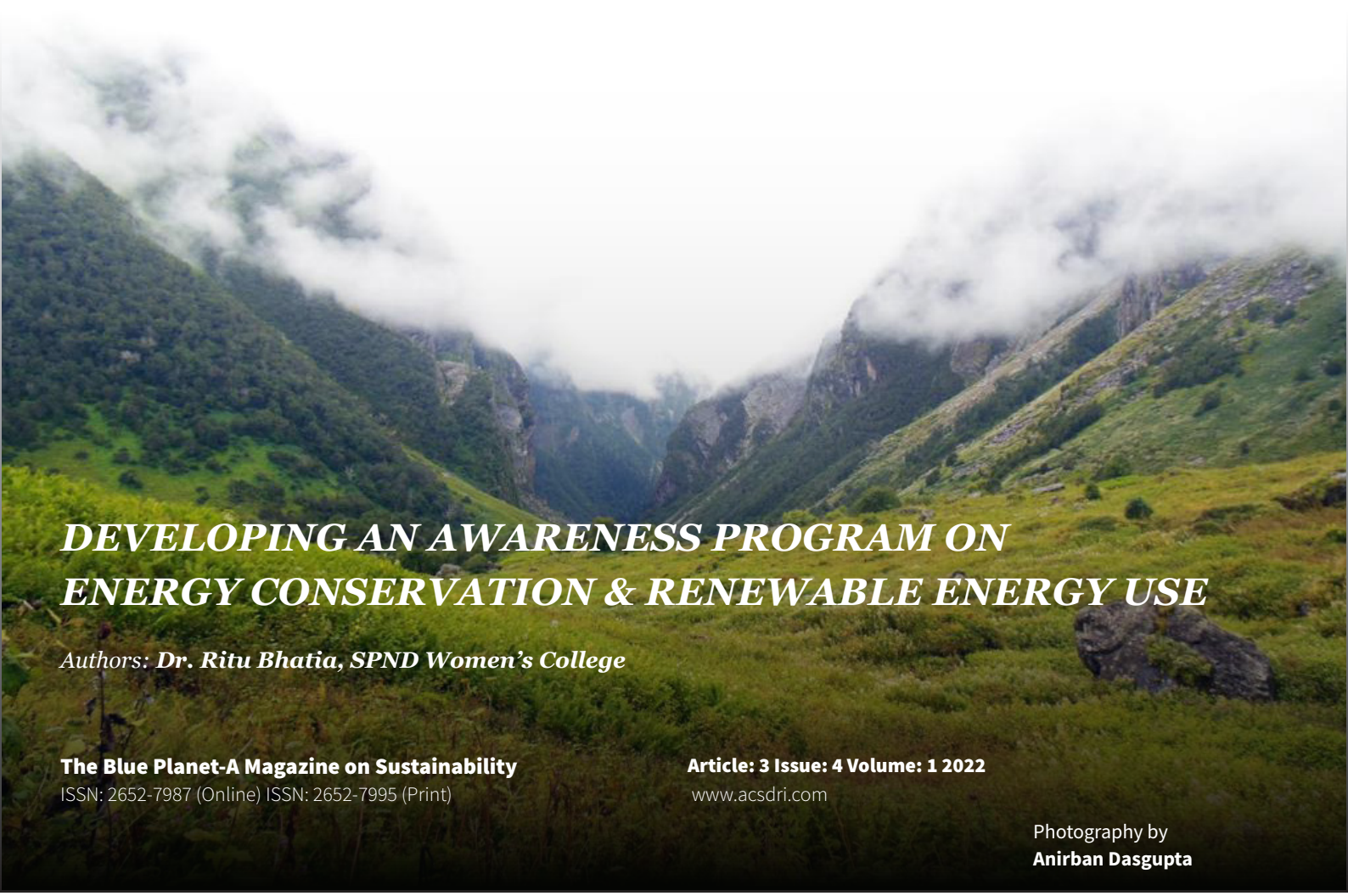

DEVELOPING AN AWARENESS PROGRAM ON ENERGY CONSERVATION & RENEWABLE ENERGY USE

Authors: ***Dr. Ritu Bhatia, SPND Women's College***

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Introduction

Energy conservation and energy efficiency are the two foremost challenges of the time. While our commitment to energy conservation will lead to less wastage of energy, our commitment to achieving energy efficiency involves adopting technologies that require less energy to perform the same functions. Sometimes, the goal of conserving energy can be accomplished by undertaking simple actions.

For example, turning off the light when leaving the room, unplugging appliances when not in use, and walking or cycling instead of driving while going to a neighbourhood market. We must change our behaviours and habits and adopt cost-effective, innovative technologies to move towards energy conservation and efficiency practices.

Education and training can be vital in creating a culture and changing behaviours and habits toward energy conservation and efficiency.

We need to teach people the importance of energy conservation, how to gain more control over their energy bills, and how to use Earth's natural resources sustainably. The Sustainable Development Goal-7 advocates for investment in energy efficiency and increasing the share

of renewable energy by 2030. Keeping this global target in mind, we have conceptualized an action-based research project to raise awareness of energy conservation among undergraduate college students living in the central suburbs of Mumbai city. The project also focused on changing their energy consumption behaviours and habits.

About the action research project

The broad objective of the project was to encourage young people to learn to be energy efficient and to introduce them to different renewable energy sources. Our community-based action research project was carried out in 3 phases with 155 college students from the middle-income socio-economic neighbourhood of central Mumbai. The project ran for three months, from October 2019 to December 2019, in collaboration with the Indian Institute of Technology (IIT) Mumbai and Tata Power.

The experts from IIT Mumbai trained selected students to make solar lamps, and the experts from Tata Power were invited to educate students about energy conservation and how we can save electricity consumption by changing our habits.

A community-based action project was undertaken to evoke awareness in young students belonging to middle-class homes regarding energy conservation. The broad aim of the project was to educate students to be energy efficient, and a specific objective was to change their daily living habits and become more competent energy users.

Execution of Project

The protect commenced with a pre-training survey to check the student's knowledge and awareness of energy conservation and to understand their current energy consumption habits and behaviours. The survey findings show that most students have poor energy consumption behaviours, such as keeping mobile phones on charge for the whole night, not switching off water heaters, or keeping laptops on when not in use. Hence, an overall insight gained from the survey showed that the majority of the students were not aware of energy conservation measures, and few used renewable sources of energy.

Furthermore, the survey data showed that most students' families pay around INR 1500 to 2000 monthly power bills. The survey also revealed that since most of these students are from modest economic backgrounds, some families struggle to pay these electricity bills.

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Phase 1: Orientation for the topic of energy conservation.

Conversation with energy experts

Experts from Tata Powers, India's leading Integrated power company, were invited as resource persons to inform students about the significance of energy conservation, energy generation processes, world energy use, and India's position in terms of its carbon footprint.

Phase 2: Workshop on making solar energy lamps.

1. Workshop on making solar lamps

The Solar lamp-making project was executed by experts from the Indian Institute of Technology (IIT) Mumbai. They trained students to make solar lamps to harness renewable solar energy. The students were provided with solar lamp kits for a nominal and affordable price, and the engineers from IIT Mumbai trained the students to assemble the kits. The experts explained to the students how to recharge lamps every day with solar energy. They were advised to use these solar lamps for their study at night. The use of solar lamps will help their families reduce their consumption of non-renewable energy and will help their families reduce their electricity bills.

2. Visits to manufacturers and outlets of solar products

The students were also taken to factories and outlets to introduce with various solar products available in the market.

Phase-3 Informative learning materials on energy conservation ideas

In the last phase, students were given informative learning materials in English and Hindi on various energy conservation ideas and rationales for energy conservation. The booklet highlights how some simple steps can make a huge difference and demonstrates how to save energy in everyday life at minimal marginal cost or without incurring additional smart gadgets.

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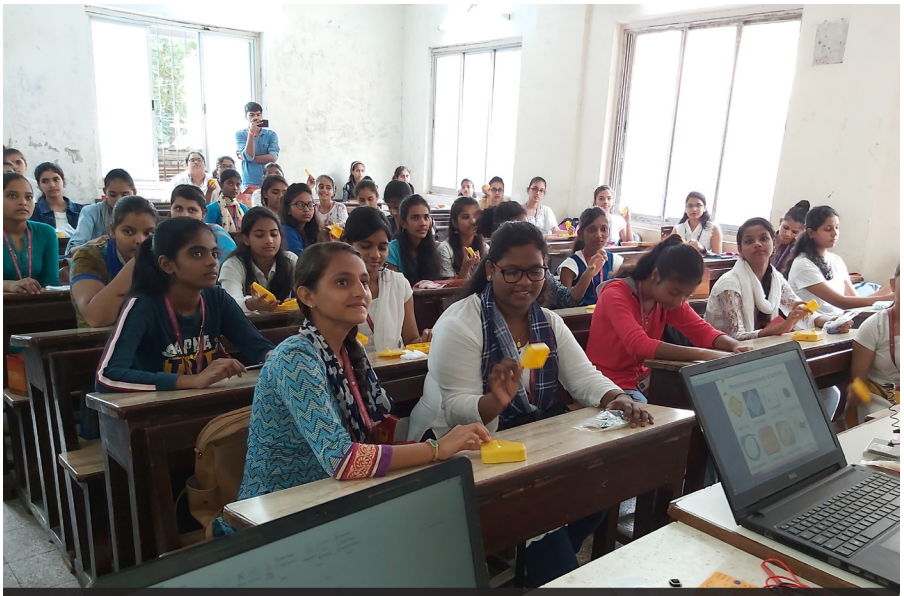
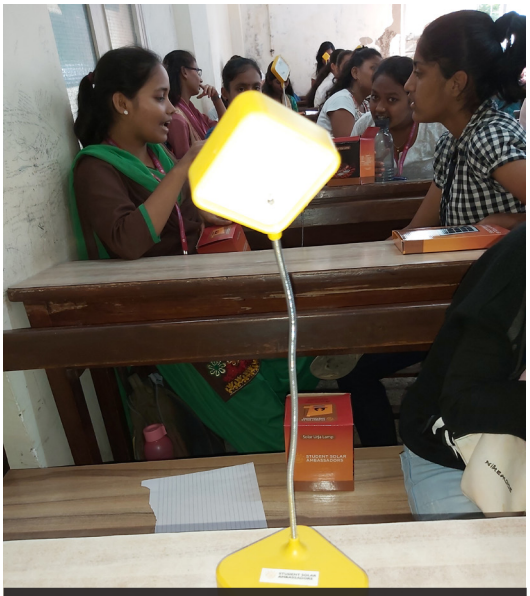
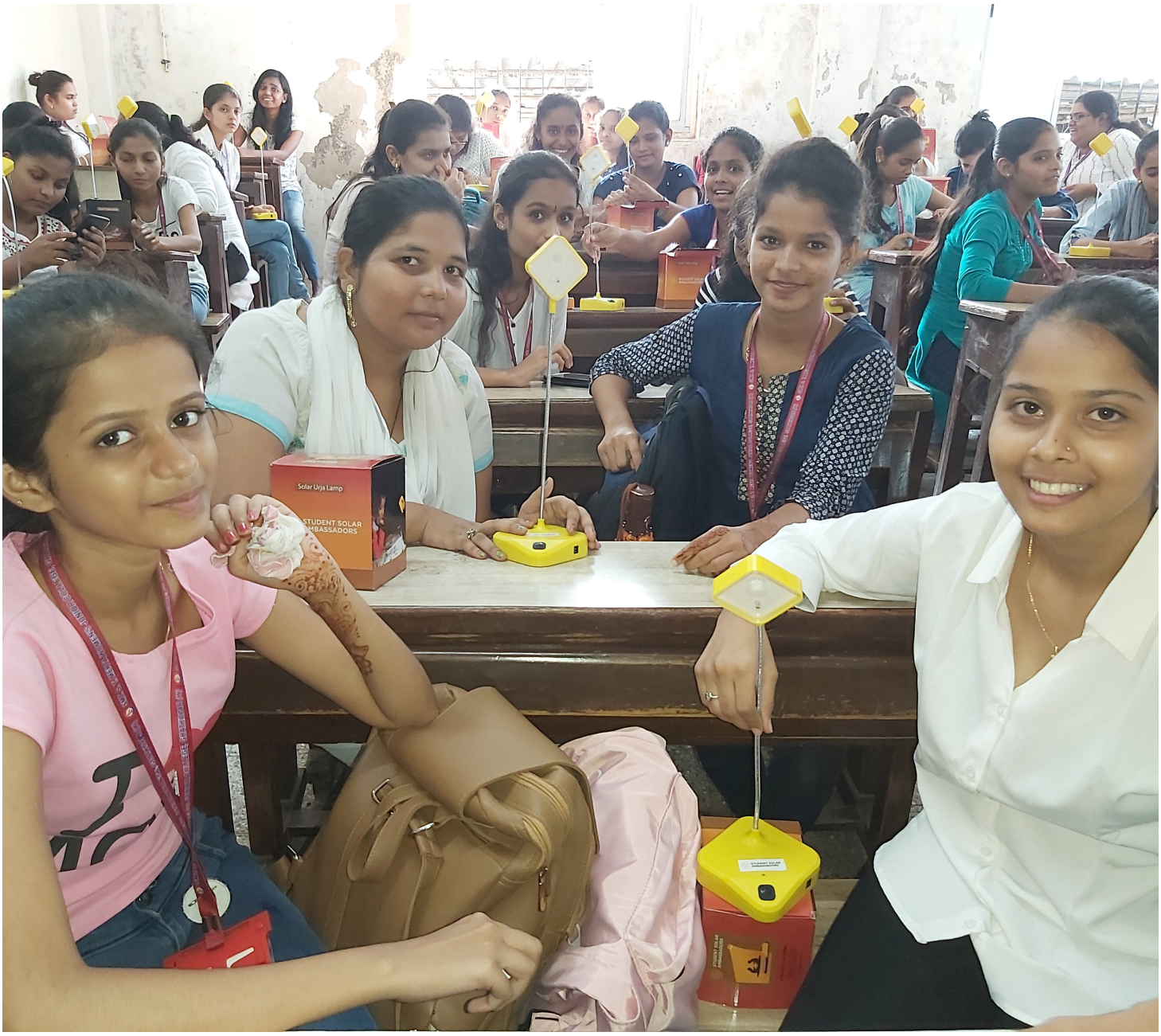


Awareness program on energy conservation & renewable energy use



Renewable energy - the fuel for future economic development



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The learning materials covered tips on lighting systems, room air conditioners, and refrigerators:

Lighting Systems

- Turn off lights when you are not in the room.
- Clean dust deposits on your tube lights and bulbs from time to time. Dust absorbs 50 percent of the light, and the light source reflects less light.
- Fluorescent tube lights and compact fluorescent lamps (CFLs) convert electricity to visible light up to five times more efficiently than ordinary bulbs, thus saving about 70% of electricity.
- Ninety percent of the energy consumed by an ordinary bulb (incandescent lamp) is used to produce heat rather than visible light.
- Replace your electricity-guzzling ordinary bulbs (incandescent lamps) with more efficient types. Compact fluorescent lamps (CFLs) use up to 75 percent less electricity than incandescent lamps.
- Paint and decorate your house in pale colours instead of dark colours, as pale colours reflect light, and the room needs less artificial lighting.
- Learned to select suitable lampshades. Darker lampshades absorb or reflect light in the wrong direction. Hence, take the right advice and choose suitable lampshades.

Room Air Conditioners

Use ceiling or table fans as your first line of defence against summer heat. Ceiling fans, for instance, cost about 0.30 paise an hour to operate—much less than air conditioners (INR.10.00 per hour).

You can reduce energy consumption from your air-conditioning by as much as 40 percent if you use thicker window curtains. Plant trees and shrubs to keep the day's hottest sun off your house.

A good air conditioner will cool and dehumidify a room in about 30 minutes, so use a timer and leave the unit off for some time.

- Try to close the door of the room when your air-conditioner is on.
- Clean the air conditioner's filter every month, as a dirty air filter reduces airflow and may damage the unit. Clean filters enable the unit to cool down quickly and use less energy.

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Refrigerators

- Make sure that the refrigerator is kept away from all heat sources, including direct sunlight, appliances such as the oven, and cooking range.
- Refrigerator motors and compressors generate heat, so allow enough space for continuous airflow around the refrigerator. If the heat can't escape, the refrigerator's cooling system will work harder and use more energy.
- Don't overfill the refrigerator and ensure adequate air circulation inside.
- Think about what you need before opening the refrigerator door. You'll reduce the amount of time the door remains open.
- Allow hot and warm foods to cool and cover them well before putting them in the refrigerator. The refrigerator will use less energy, and condensation will be reduced.

Water Heaters

- To reduce heat loss, always insulate hot water pipes, especially where the pipe passes through an exposed area.
- By reducing the temperature setting of the water heater from 60 degrees to 50 degrees C, saving over 18 percent of the energy used at the higher setting is possible

Microwave Ovens & Electric Kettles

- Remember, microwaves cook food from the outside edge toward the center of the dish, so place more extensive and thicker items on the outside if you're cooking more than one item.
- Use an electric kettle to heat water as it is more energy efficient than an electric cooking top.
- It takes more energy to heat a dirty kettle, so clean your electric kettle regularly by mixing vinegar in the water and keeping it on the boil for some time, as the mixture will remove mineral deposits.
- Don't overfill the kettle for just one drink. Heat only the amount of water you need.

Computers

- Keep your computers and laptop in sleep mode when they are not in use; that simple action will help to reduce energy consumption by approximately 40%.
- Unplug your laptop, mobile phone, and digital camera battery chargers, as they draw power whenever they are plugged in.
- Buy energy-efficient appliances with energy-star ratings, as higher-rated appliances consume less energy and save money.

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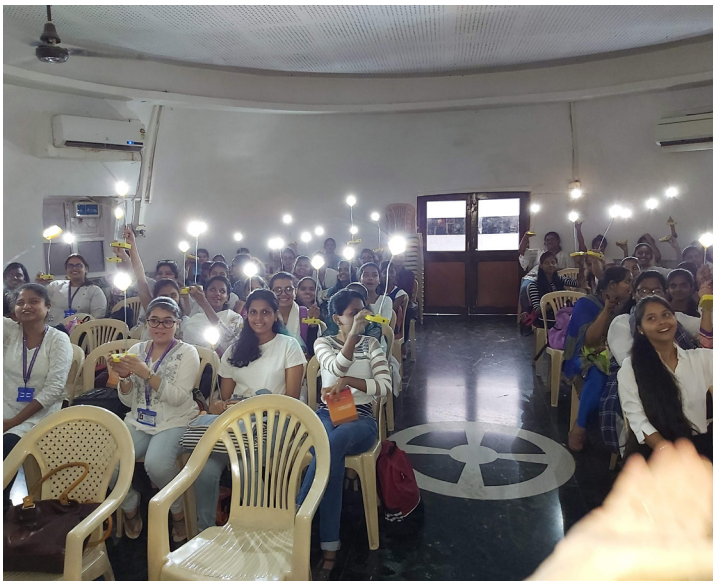
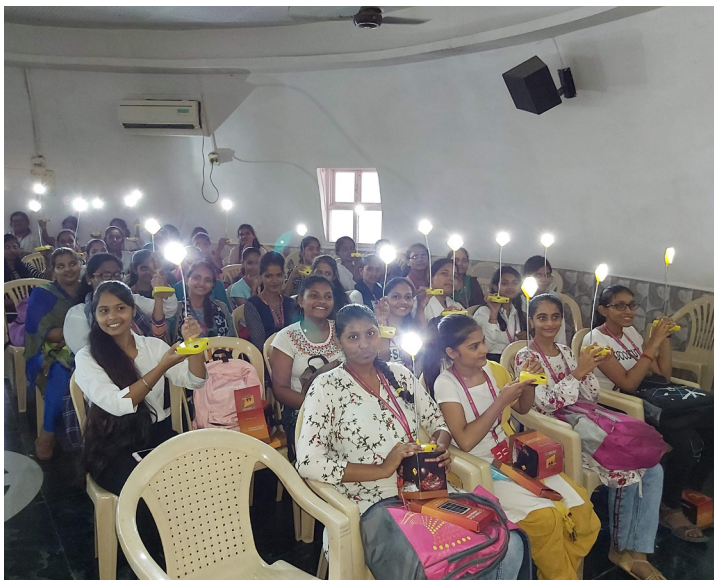
Conclusion

The post-project survey response showed that exposure to the ideas of energy conservation and energy efficiency gave the majority of the students a better understanding of the issues. Most students also responded that they use solar lamps at night. The project has taught students to harness renewable energy cost-effectively for their households. Hence, this action-based project and training method can be adopted as a working model to bring behavioural change, teach youths about the importance of energy conservation, and introduce them to one of the primary sources of renewable energy.





Renewable energy for ALL by 2030 - Our commitment To PARIS AGREEMENT

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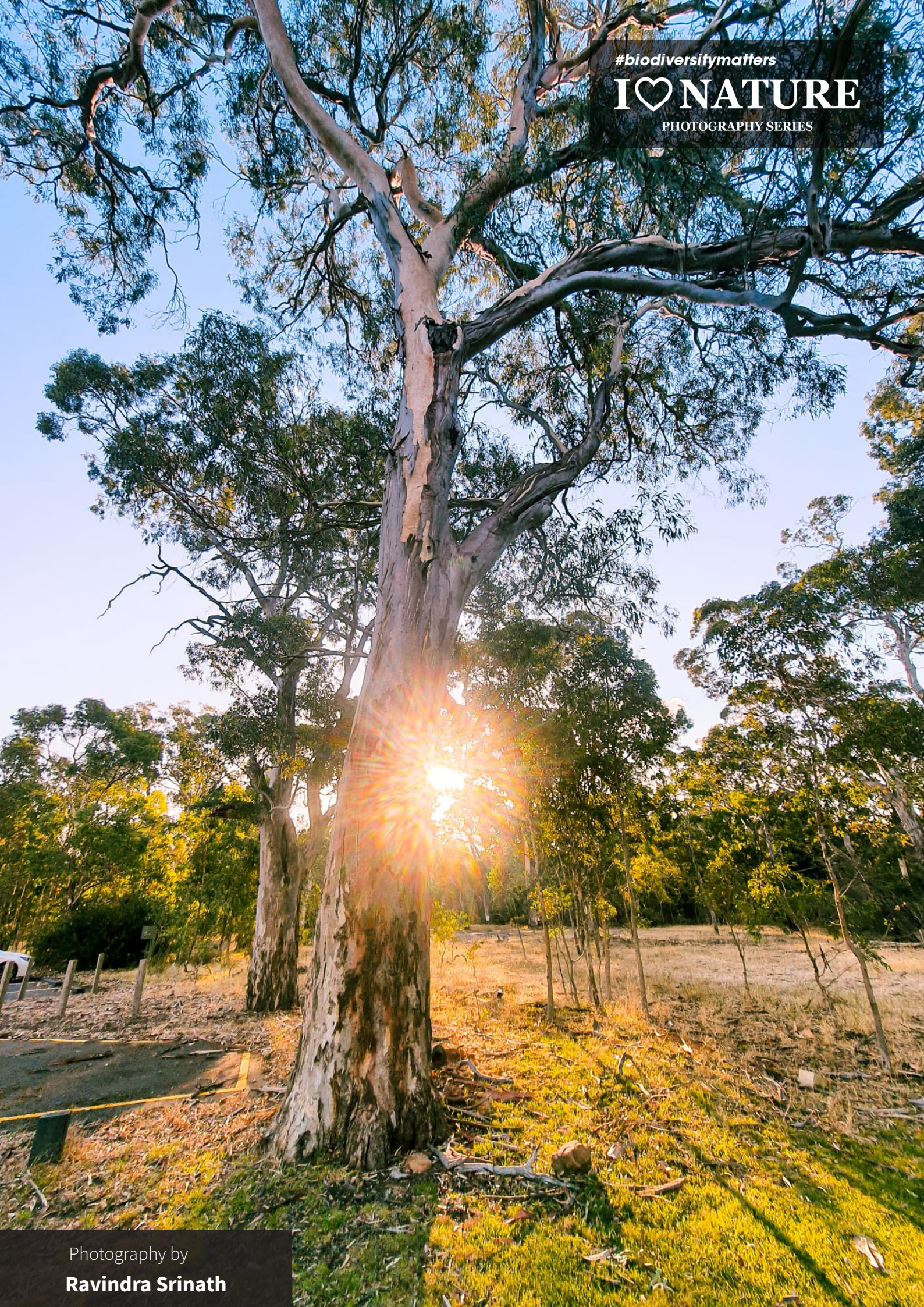

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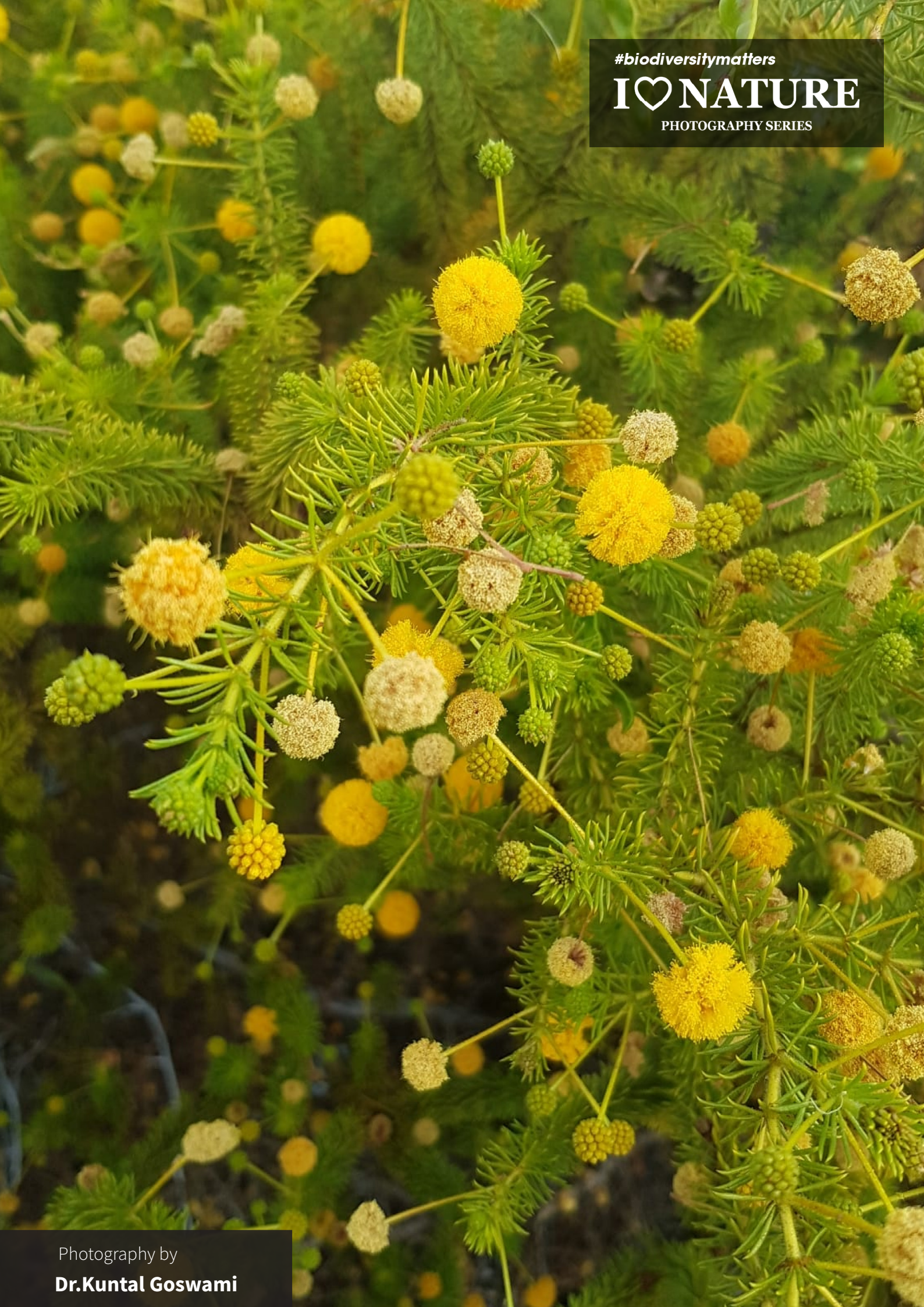

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...Loss of Biodiversity is one of the TOP EXISTENTIAL THREATS for mankind...

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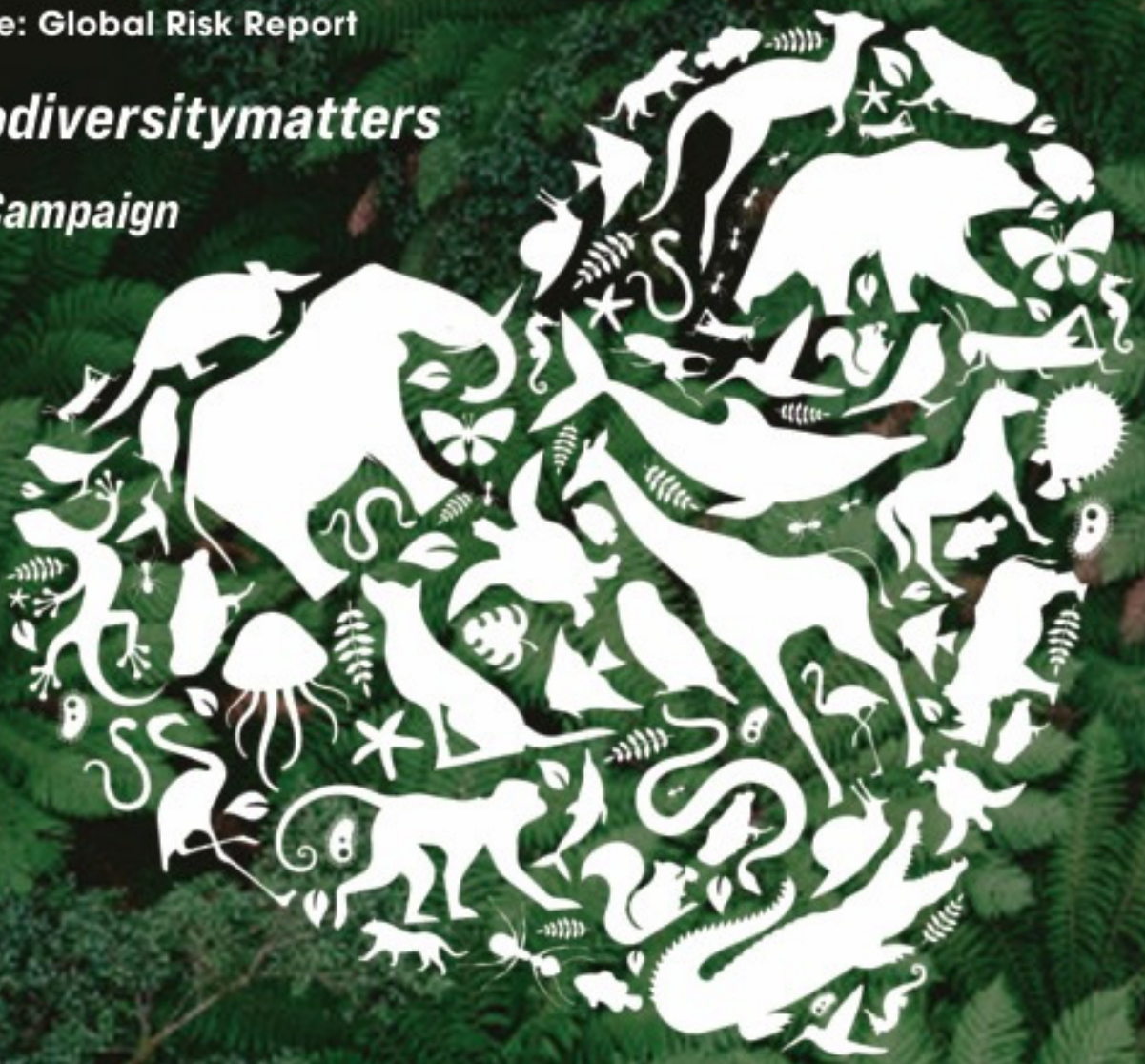

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