

ECO CLUB NEWS LETTER



# Ankura



*The Saviours of Nature*



*Climate Action  
Now or Never!*

**COP 28**



Volume 7

Annual

March 2024



# Table of

# *Contents*

- 03** Editorial
- 04** Facts and Quiz
- 05** The Gentleman of the Jungle
- 06** COP 28 - What we need to know
- 08** Concerning Environment Tales Around Us
- 10** Eco Captures
- 11** Thought Box
- 12** Eco Club @ AMS



## About Ankura

Ankura is an annual news letter brought out by the Eco Club at Andhra Mahila Sabha Arts and Science College for Women. It is one of the best practices of the Department of Botany. The Eco Club received National Environmental Awareness Award from Khadi and Village Development, New Delhi in 2008. The publication was initiated to spread the awareness among the society regarding the basic principles of environment. Our intention is not only to foster a habit of learning about the nature and environment, but to inculcate a thought of eco friendly practices in day to day lives. Being said very wisely, never think small deeds taken up by a committed individuals will never change the world, We believe that we will be successful if we can at least trigger a thought process leading towards the change. Even a journey of thousand miles starts with a single step. Hence we are herewith our **seventh volume** of news letter trying to better ourselves in every step.

## Editors Note

El Niño comes into play as equatorial Pacific Ocean warm waters weaken trade winds in the tropics, affecting oceans around the world. The past three years of La Niña with cooler equatorial Pacific waters is over. Scorching temperatures, this year are however expected to have hitting high ranges. While the globe suffers El Nino, the escalating climate change fuels it a bit more. We await La Niña to bring back the soothing fine weather. The other way around Paris Agreement standards aren't observable; green house gas concentrations grew. Carbon dioxide levels are 50% above pre industrial level, methane rose, nitrous oxide has an year on year increase We have had the highest of temperature records, worst of forest fires, worst of droughts on record. I am afraid if the response to them is also worst on record. Amidst all this there was a COP 28 formality with a caption Unite.Act.Deliver. Deciphering them, the world still needs to a selfless unity, a promising action and planned delivery in regard to the climate change. "It is still a win for this COP, making history by putting the world on track to phase out fossil fuels. However, the wording throughout is weak, despite that it is stronger than the previous version [at COP27]...this is mainly signaling a start that governments will work on to transition away from fossil fuels, but just a start. The phase down of fossil fuels was a big call but the leaders still don't seem to be vesting in transitional fuels. The presidency seems glad to sell their oil belittling the scientific thought of sustainability. The Gaza war is also a worst hit to the environment because environment inseparably goes hand in hand the socio-economy. As mentioned earlier we need a self less unity. The oil production may be profitable or sustainable or even neutral towards the gulfs but the islands are the worst hit. The Tuvalu is already immersing, the rising temperatures don't leave any island idle. Do you all think the loss and damage funds can clear up all the catastrophe? They were the need of the hour but not the eradication of root cause. The 1.5°C rise in global temperature is no far. If this control is unmanageable then don't aim that something will be. There is still clearing of forests, threat to biodiversity, the ice caps are melting. Live and Let Live is the past; Now it is Let Everything Live so we can live. It is not the inter governmental treaties that help; in fact it is the awareness about them in common man that matters. Especially the young generation. The need to thing about it, raise their voice and start their action. It is the daily routine that helps mitigate climate change. It is the tiny actions that matter. Larger governmental decisions are just a support but the conscience in the society is what brings them up. We should Think Green, Act Green and Spread Green. Despite the warnings, scientific evidences, devastations, destructions, we still are heading in a wrong direction. Take the right path or else there is definitely a dead end. Climate action cannot wait.

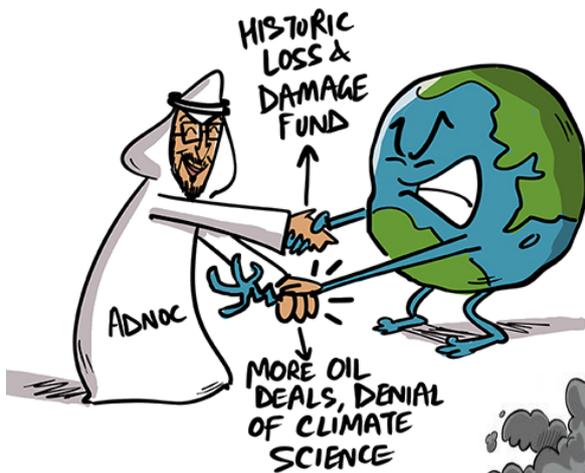


***It is now or never!***

# A Quick Fact Roll

- ◆ The Ozone Layer “Hole” which is 29 million square kilometers, is expected to be fully healed in the next 55 years. This is due to the world wide banning of chloro-fluorocarbon and hydro fluorocarbon.
- ◆ In the last 170 years, we added 2.4 trillion tons of Carbon Dioxide into our atmosphere. Half of this was added in the last 35 to 50 years.
- ◆ We have explored more of Space than our terrestrial oceans
- ◆ The Great Pacific Garbage Patch is a ring of trash and waste. It covers approximately 1.6 million km<sup>2</sup>, an area thrice the size of France and twice the size of Texas, and contains around 100 million tons of rubbish.
- ◆ Antarctic and Greenland ice sheets lose 427 billion tons of ice annually. To put this into perspective, imagine nineteen football fields.
- ◆ Tropical deforestation claims about 12 million hectares of forest each year. If this trend continues, there will be no rainforests in the next 79 years.

## UAE AT COP-28



www.greenhumour.com

### NATURAL SWINGS



### NATURAL SWINGS PLUS CLIMATE CHANGE



NOAA Climate.gov



# QUIZ

## 1. UNEP stands for

- a) United Nations Economic Protection
- b) United Nations for Environment Protection
- c) United Nations Environment Programme
- d) United Nations Environment Platform.

## 2. The phenomenon of abnormal warming of the vast pool of water in Pacific Ocean is due to

- a) Global Warming
- b) Greenhouse Gases
- c) Ozone Depletion
- d) Elnino effect

## 3. Who among the following environmentalist is the recipient of “The Right Livelihood Award” (the alternative Noble Prize)

- a) Medha Patkar
- b) Vandana Shiva
- c) Sunderlal Bahuguna
- d) Wangaari Mathai

## 4. “There is something infinitely healing in nature- the assurance that dawn comes after night and spring after winter” these lines are quoted in Silent spring by

- a) Rachel Carson
- b) Wangaari Mathai
- c) Ralph Waldo Emerson
- d) Oscar Wilde

## 5. The pH of acid rain ranges from

- a) 5 to 6.8
- b) 2 to 3
- c) 7 to 9
- d) 4 to 4.5

## 6. Which type of the clouds generally cause rainfall

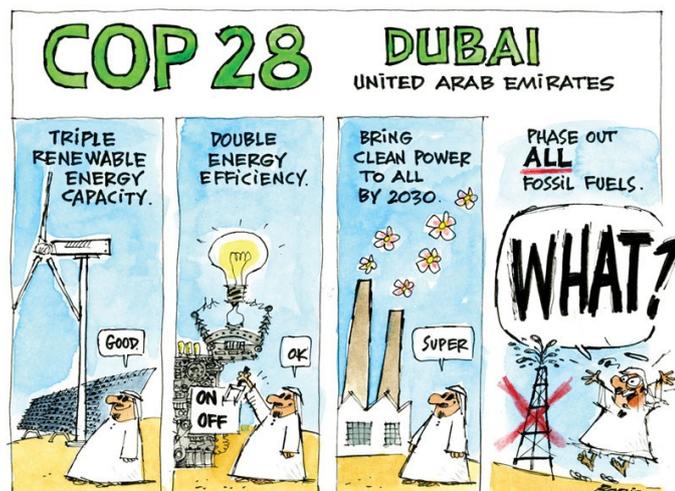
- a) Cirrocommulus
- b) Cummulonimbus
- c) Stratocumulus
- d) Cirrus

## 7. The method of growing seeds or shrubs amidst crops or pastureland is known as

- a) Mixed farming
- b) Bioclimatics
- c) Agroforestry
- d) Orchard farming

## 8. Which among the following are not related to protection of environment

- a) Green Belt Movement
- b) Kyoto Protocol
- c) Qidong protest
- d) Treaty of Paris



# The Gentleman of the Jungle

## Project Tiger @ 50 Years



A Triumph Of Conservation - We proudly celebrate 50th Anniversary of Project Tiger. The recent survey depicts that India houses over 70% (highest in the world) of the world's wild tiger population, showcasing its pivotal role in

### Why Project Tiger?

The Government of India launched the Project Tiger with the aim of saving the steadily declining population of tigers in India. It was an appeal to Mrs. Indira Gandhi by Notable conservationist—Dr.Kailash Sankhala who is also the 1st Director of Project Tiger in India. During the 12th Plan, the budget had allocated Rs.1245 crore for Project Tiger.

### Threats to Tigers

-  Unsustainable land use
-  Habitat loss
-  Human-wildlife conflicts
-  Poaching
-  Climate change
-  Scarcity of prey

*The launch of the International Big Cat Alliance, focusing on safeguarding iconic big cat species across 97 countries with a \$100 million funding commitment, represents a new chapter in India's conservation legacy, inspired by the principle of "Vasudaiva Kutumbakam," the belief that the world is one family.*

### Tiger census

Tiger census is held every four years in the country. At the turn of the 20th century, India had a population of tigers that ranged from 20000 to 40000.



The first tiger census, in 1972, used the unreliable pug-mark method to count 1,827 tigers.

From 2010 to 2014, there has been a 30% rise in the number of tigers in India. The growth rate slowed to 6.7% in the four years from 2018 to 2022, from around 33% during 2014-2018 there are 2226 tigers in India.

As of 2022, the tiger population is estimated at 3,167-3,925, showcasing a growth rate of 6.1% per year.



It was started on 1st April 1973 from Jim Corbett National Park, Uttarakhand.



The administrating body for the project is the National Tiger Conservation Authority (NTCA).

### Tiger reserves

In 1973, Project Tiger began with 9 reserves covering 9,115 sq. km. By 2018, it had grown to 55 reserves in different states, totaling 78,135.956 sq. km or 2.38% of India's land area.

### The Monitoring System for Tigers

Intensive Protection and Ecological Status, or M-STriPES was launched in 2010 and is a software-based monitoring system for tigers.

Information technology is used to keep a tab on the number of tigers. The e-Eye system was launched in 2016 at Corbett, which uses thermal cameras for enhanced surveillance.



# COP 28 - What we need to know

*"Beginning of the End" of the Fossil Fuel Era*

## What?

The UNFCCC 28<sup>th</sup> Conference of Parties (COP-28) took place in Dubai, UAE, with representatives from 197 countries presenting their initiatives to curb global warming and engaging in discussions on future climate actions.

The conference yielded a mix of positive outcomes and disappointments, marking a substantial step forward since the Paris Agreement. While some hail it as the conclusion of the fossil fuel era, there are apprehensions about deficiencies in adaptation efforts and troubling gaps in mitigation strategies.

More than 70,000 delegates attended COP28, including the member states (or Parties) of the UN Framework Convention on Climate Change (UNFCCC). Business leaders, young people, climate scientists, Indigenous Peoples, journalists, and various other experts and stakeholders are also among the participants.

## Where?

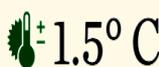


Dubai, United Arab Emirates

## When?



## Key Focus



The target for limiting global warming to reduce the harmful effects of climate change.



The amount of emission reductions we could realize by protecting and restoring nature.



The amount of climate funding currently allocated to nature-based solutions.



### Centering nature, people, lives & livelihoods

Put nature, people, lives and livelihoods at the heart of climate action, including helping the most vulnerable communities adapt to the change that's already occurring.

### Transitioning to Clean Energy

Fast tracking the energy transition and slashing emissions before 2030 to limit global warming to 1.5° C (2.7° F) above pre-industrial levels.

### Delivering on finance

Deliver old promises and set the framework for a new deal on finance. Climate finance must be affordable, available, and accessible to developing countries.

### Mobilizing inclusivity

Mobilize the most inclusive COP ever, ensuring that decisions and discussions, and how the solutions are implemented, are truly inclusive and done in collaboration with Indigenous Peoples and local communities.

## The Incoming Presidency announced that COP 28 will focus on four paradigm shifts:

- ◆ Fast-tracking the energy transition and slashing emissions before 2030;
- ◆ Transforming climate finance, by delivering on old promises and setting the framework for a new deal on finance;
- ◆ Putting nature, people, lives, and livelihoods at the heart of climate action; and
- ◆ Mobilizing for the most inclusive COP ever.

## Key Concerns

- ⇒ No Specific Timelines for Fossil Fuel Phase-out
- ⇒ No Specified Targets on Tripling of Global Renewable Energy
- ⇒ No Clear Mechanisms for Achieving Adaptation Goals
- ⇒ Lack of Accountability on Financial Commitments
- ⇒ Varying Interpretations on Climate Finance
- ⇒ Resistance over Phase-down of Coal
- ⇒ Cutting methane emissions could involve tweaking agricultural patterns which could be extremely sensitive in a country like India





## Key Outcomes

**Global Stocktake Text :** The text proposes eight steps to keep the global temperature rise within the ambit of 1.5 degrees Celsius. COP28 calls for transitioning away from fossil fuels in energy systems, in a just, orderly, and equitable manner, accelerating action in this critical decade, to achieve net zero by 2050.

Global adaptation goal focuses on enhancing adaptive capabilities, and minimizing vulnerability for sustainable development. At COP28, this text calls for a doubling in adaptation finance and plans for assessments and monitoring of adaptation needs in the coming years.

The United Nations Conference on Trade and Development (UNCTAD) estimates that wealthy nations owe developing countries USD 500 billion in 2025 under the New Collective Quantified Goal (NCQG) for climate finance. The goal is to set a new collective quantified goal before 2025. The goal will start from a floor of USD 100 billion per year.

Member countries reached an agreement to operationalize the Loss and Damage (L&D) fund aimed at compensating countries grappling with climate change impacts.

The Pledge stipulates that signatories commit to work together to triple the world's installed renewable energy generation capacity to at least 11,000 GW by 2030.

It also calls for collectively double the global average annual rate of energy efficiency improvements from around 2% to over 4% every year until 2030.

### The Global Cooling Pledge for COP 28:

It includes 66 national government signatories committed to working together to reduce cooling-related emissions across all sectors by at least 68% globally relative to 2022 levels by 2050.

### Declaration to Triple Nuclear Energy:

The declaration launched at COP28 aims to triple global nuclear energy capacity by 2050.

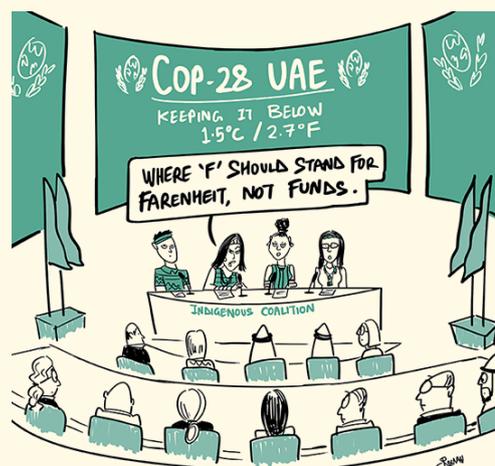
## Contribution of India

- The **Green Credit Initiative** has been conceptualized to incentivize voluntary pro-planet actions, to the challenge of climate change.
- It envisions the issue of Green Credits for **plantations on waste/degraded lands and river catchment areas**, to rejuvenate and revive natural ecosystems.
- **Phase II of the Leadership Group for Industry Transition (LeadIT 2.0):** It will focus on **inclusive & just industry transition**, co-development and transfer of low-carbon technology, and financial support to emerging economies for industry transition.
- **Global River Cities Alliance (GRCA):** It was launched at COP 28, led by the **National Mission for Clean Ganga (NMCG)** under the **Ministry of Jal Shakti** Government of India.
- GRCA highlights India's role in **sustainable river-centric development** and climate resilience.
- **Quad Climate Working Group (QCWG) on Localised Climate Action :** The event focused on recognizing and amplifying the role of local communities, and regional governments in supporting sustainable lifestyles.

***If we fail with the phase out on fossil fuels then we are not going to be successful on climate mitigation.***

**-Petteri Taalas** WMO SECRETARY GENERAL

AS UAE'S NATIONAL ANIMAL, I, THE ARABIAN ORYX, AM HERE TO REMIND GOVERNMENTS, FUNDERS & STAKEHOLDERS THAT YOU TOO, ARE 'BIODIVERSITY'!



## New Wetlands added as Ramsar Sites

**Wetlands** are crucial for human survival. They are the cradles of biological diversity. A wetland is a place in which the land is covered by water—salt, fresh, or somewhere in between—either seasonally or permanently. It functions as its own distinct ecosystem. You can recognize wetlands from other types of land or bodies of water primarily by the vegetation that has adapted to wet soil. Wetlands act as natural water filters as they trap pollutants such as phosphorus and heavy metals in their soils, transform nitrogen into a form that's easier for plants to take in, and physically and chemically break down bacteria.

Wetlands take many forms including rivers, marshes, bogs, mangroves, mudflats, ponds, swamps, billabongs, lagoons, lakes, and floodplains. Most large wetland areas often include a combination of different types of freshwater systems. Wetlands cover a small portion of the planet, but their carbon capturing abilities pack a big punch. They can store 50 times more carbon than rain forests, helping to keep the heat-trapping gas that contributes to climate change out of the atmosphere. Wetlands pull leaves, animal waste, and other high carbon matter down from the surface of the water. This natural debris is buried by the water and sediment in the wetlands, locking them away. Another advantage is that wetlands grow quickly and remain stable, meaning they have long lifespans of sucking carbon from the atmosphere.

A **Ramsar site** is a wetland of international importance under the **Ramsar Convention**, which is also known as the 'Convention on Wetlands' — an intergovernmental environmental treaty established by UNESCO in 1971, and named after the city of Ramsar in Iran, where the convention was signed that year. India now has 80 Ramsar sites covering an area of 1.33 million hectares.

**Five new Ramsar sites, added ahead of this year's World Wetlands Day**, are in Tamil Nadu and Karnataka. The newly declared sites include **Karaiyetti Bird Sanctuary** and **Longwood Shola Reserve Forest** in Tamil Nadu, and **Magadi Kere Conservation Reserve**, **Ankasamudra Bird Conservation Reserve** and **Aghanashini Estuary** in Karnataka. The Ramsar tag bestows these ecosystems with international recognition, gives them access to international management practices and increases the possibility for international funding.



# Concerning Environm

## I am Parrot fish... I make the beach sand

Approximately 90 different species of parrotfish (family *Scaridae*) are found throughout the world in shallow subtropical and tropical oceans. They are mostly herbivorous grazers. Parrotfish and other reef herbivores help to maintain the structure and function of coral reefs by grazing algae that might smother coral.

Parrotfish are colorful, tropical creatures that spend about 90% of their day eating algae off coral reefs. This almost-constant eating performs the essential task of cleaning the reefs which helps the corals stay healthy and thriving. Parrotfish live in reefs all around the world, but they all generally live about 5-7 years and grow to 1-4 feet in length. They typically feed during the day and sleep—by wrapping themselves in a safety cocoon made of mucus or by finding a hiding place in the coral—at night.

Coral reefs face a lot of threats, of course—from climate change to pollution to invasive species. Restoring parrotfish populations, herbivores that keep seaweed in check on the reefs, could pay big dividends in restoring reefs. If it weren't for parrotfish, corals would quickly become suffocated by seaweeds on many reefs around the world—which is what is happening in the Caribbean and in the Pacific.

In the South Pacific, this is largely due to overfishing of bumphead parrotfish. Bumpheads have an unfortunate habit of sleeping in natural aggregations at predictable locations in shallow water, meaning that fishermen can quickly find and spear dozens of them at once. Parrotfish are considered a delicacy in many countries and can also be sold abroad by falsely labeling the meat as grouper—for which there is higher demand. Due to these fishing pressures, bumphead parrotfish are now extinct in Guam and heavily depleted in Fiji, Samoa, Papua New Guinea and others parts of the Solomon Islands.

The parrotfishes' digestive system, which includes more teeth inside their throats breaks down coral bits into the white sands that make South Pacific beaches famous. Known as **bioerosion**, this process helps control algae populations and create new surfaces for baby corals to attach to and grow. But just how much sand can a parrotfish produce? Surely it can't be enough to really make whole beaches? Think again. Scientists estimate that a single *Chlorurus gibbus* parrotfish can poop out more than **2,000 pounds** of sand each year!

Parrotfish have unique teeth that allow them to play an integral role on coral reefs, especially in the Caribbean and Indo-Pacific. Parrotfish teeth are fused together. This fusion enables them to scrape off fine, filamentous algae that grow within coral skeletons and on dead coral substrates. During this scraping while foraging for algae, parrotfish often ingest chunks of coral. Parrotfish have a **pharyngeal mill** that acts like additional teeth to assist in grinding up the hard coral. Which through their digestive tract is expelled as **fine-grain white sand**. The sand that is produced by parrotfish forms beaches and provides valuable habitat for benthic organisms like crabs and shrimp. Scientists estimate that up to 70% of the sand on white sandy beaches in the Caribbean and Hawaii has been excreted by parrotfish. A large adult parrotfish can excrete over a ton of sand per year.



# Our Fruit Makers in Danger

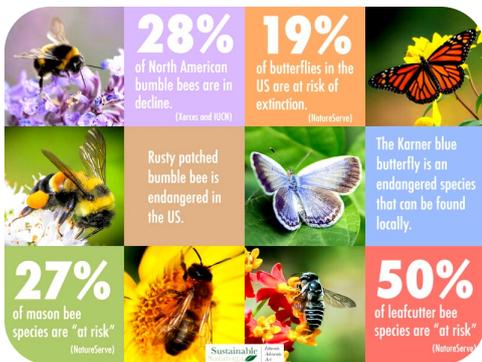


With over 8 billion people on the planet as of 2022, there will undoubtedly be more conflict between the need to produce more pollinated foods (75% of crops grown now depend on pollination) and the immediate need to protect pollinators. The demand for pollinated foods would only increase as the world's population rises and lower-income countries become wealthier; however, the current analysis did not account for this future need. These trends have upsides: more diverse diets, less hunger and malnutrition, and higher intakes of health-promoting food groups.

A study tracked 344 crop fields depending on 33 insect pollinators around the world, finding that around one-quarter of the cropland yield gap (the gap between average farms and those bringing in the most crops) was likely linked to lost pollinators. The world's pollinators are vanishing for a host of reasons, but the largest is loss of habitat. Other escalating impacts include the use of pesticides and climate change. The many ways that declining biodiversity is, and will, impact human health and food availability is an important area of knowledge that often gets

overlooked in coverage of biodiversity decline. Researchers estimate that globally declining pollinators have caused a drop in 4.7% of fruit and nut production and 3.2% of vegetables. According to a recent modelling study, the global reduction of insect pollinators is causing half a million people to die young each year and has affected the cost and availability of nutritious foods such as fruits, vegetables, legumes, and nuts. China, Russia, India, and other middle-income nations are among the most severely affected. Rich countries were more resistant to the reduction of pollinators.

Reducing and banning the use of dangerous pesticides like neonicotinoids, maintaining current pollinator habitat and establishing new pollinator habitat on farms and across the country, and addressing climate change can all greatly increase the number of wild pollinators. Fewer pollinators mean less human access to fruit and vegetables. The conclusion, if proven out by further studies, is damning: pollinator decline, which has been observed in multiple nations across continents over decades, is already taking a real toll on human health and mortality.



# ent Tales Around Us

## ECONomy



Bharati Prusetch, a woman in her late 30s from Phuldhudi, a village in Odisha's Sundargarh district, has transformed her previously barren backyard into a lucrative source of income. She reuses and recycles paddy field waste, to cultivate mushrooms and produce Vermicompost. Prusetch earns over Rs. 1 lakh annually through this cost-effective activity. Phuldhudi pioneered the initiative in 2018. As more and more people began utilising residue from paddy cultivation to grow mushrooms, the idea quickly spread to 15 other villages. The activity is a significant boost to the local economy, as nearly 1,000 families across these 15 villages in the district have now embraced crop residue management systems, minimizing adverse environmental effects, optimising crop yields, and generating an additional income. "Instead of viewing agricultural by-products as mere residues, they have transformed them into valuable resources in the bio economy model. In Sundargarh however, farm waste including crop residues, manure, and leftover organic matter, is viewed as an asset than an environmental liability.

The paddy straws are used to prepare natural beds to cultivate paddy straw and oyster mushrooms. Paddy straw mushrooms are typically grown on substrates such as cotton waste, thatched roofs, or paddy straw, allowing for year-round cultivation. Oyster mushrooms –which were once considered wild mushrooms as they primarily grew on decaying wood– are now extensively cultivated locally.

After a 25-day cycle with regular watering and observation, each paddy bed has the potential to produce a minimum of three kilograms of mushroom harvest per day. One kilogram of the mushroom is sold at Rs. 400 in the market. Phuldhudi for instance, has 18 mushroom cultivation units, each containing 200 beds. A single unit spans 25 decimal areas of land, the residents explain. These Sundargarh's villages began utilising the paddy straw waste leftover from mushroom cultivation for vermicomposting and producing natural manure instead of discarding it as waste.

Since 2022, the 15 villages have produced 2891.4 quintals of Vermicompost. After personal use, 2471.4 quintals were sold, thus generating an income of Rs. 49,42,800. During the same period, mushrooms worth Rs. 30,63,320 were also sold. In 2023 alone, 56.26 quintals of mushrooms and 2,244 quintals of Vermicompost have been produced so far.





# Clean and green programme

## Haritha Haaram



# Eco Captures



## Eco-friendly Ganesh idols & awareness on 21 pathras



# Renewable Energy

- P.Poojitha, B.Sc BZC III Year

Renewable energy emerged as mainstream and support the expanding access to modern energy services in a timely and environmentally sustainable manner. Renewable sources are able to deliver a wide spectrum of electricity services for households, public services, commercial and industrial uses. After Covid renewable sources have been used more due to the economical crisis and people served by sustaining the natural sources and developed new techniques for the consumption of renewable energy. Renewables are increasing displacing dirty of fossil fuels in the power sector offering benefit of lower emissions of carbon and other types of pollution.

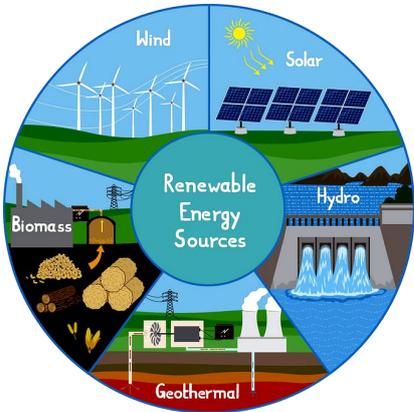
Renewables energy is often referred to as clean energy. It is much used for heating, transportation, lighting and much more.

**Wind energy:** Wind has powered boats to sails the seas and wind mills to grind grain.

**Solar energy:** much used for generating electricity, heating or desalinating water.

**Geothermal energy:** heating and cooling buildings through geothermal heat pumps generating electricity through geothermal power plants.

**Hydrogen energy:** industrial processes as rocket fuel, and in fuel cells for electricity generation and powering vehicles. Renewable energy supplies reduce the emission of greenhouse gases and can be sustained.



# Horticulture

- Ashwitha, B.Sc BZC III Year

Horticulture, the branch of plant agriculture dealing with garden crops, generally fruits, vegetables, and ornamental plants. The word is derived from the Latin hortus, "garden," and colere, "to cultivate." As a general term, it covers all forms of garden management, but in ordinary use it refers to intensive commercial production. In terms of scale, horticulture falls between domestic gardening and field agriculture, though all forms of cultivation naturally have close links. Horticulture is divided into the cultivation of plants for food (pomology. And olericulture) and plants for ornament (floriculture and landscape horticulture). Pomology deals with fruit and nut crops. Olericulture deals with herbaceous plants for the kitchen, including, for example, carrots (edible root), asparagus (edible stem), lettuce (edible leaf), cauliflower (edible flower buds), tomatoes (edible fruit), and peas (edible seed). Floriculture deals with the production of flowers and ornamental plants; generally, cut flowers, pot plants, and greenery. Landscape horticulture is a broad category that includes plants for the landscape, including lawn turf but particularly nursery crops such as shrubs, trees, and vines.

## Horticultural regions :

**Temperate zones :** Temperate zones for horticulture cannot be defined exactly by lines of latitude or longitude but are usually regarded as including those areas where frost in winter occurs, even though rarely. Thus, most parts of Europe, North America, and northern Asia are included, though some parts of the United States, such as southern Florida, are considered subtropical. A few parts of the north coast of the Mediterranean and the Mediterranean islands are also subtropical. In the Southern Hemisphere, practically all of New Zealand, a few parts of Australia, and the southern part of South America have temperate climates.

**Tropical zones:** There is no sharp line of demarcation between the tropics and the subtropics. Just as many tropical plants can be cultivated in the subtropics, so also many subtropical and even temperate plants can be grown satisfactorily in the tropics. Elevation is a determining factor. For example, the scarlet runner bean, a common plant in temperate regions, grows, flowers, and develops pods normally on the high slopes of Mount Meru in Africa near the Equator, but it will not set pods in Hong Kong, a subtropical situation a little south of the Tropic of Cancer but at a low elevation.

## PROPAGATION

Propagation, the controlled perpetuation of plants, is the most basic of horticultural practices. Its two objectives are to achieve an increase in numbers and to preserve the essential characteristics of the plant. Propagation can be achieved sexually by seed or asexually by utilizing specialized vegetative structures of the plant (tubers and corms) or by employing such techniques as cutting, layering, grafting, and tissue culture. (A detailed discussion of the methods of controlling sexual propagation can be found in the article plant breeding.)

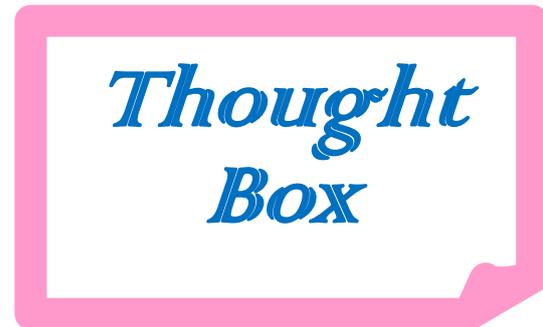
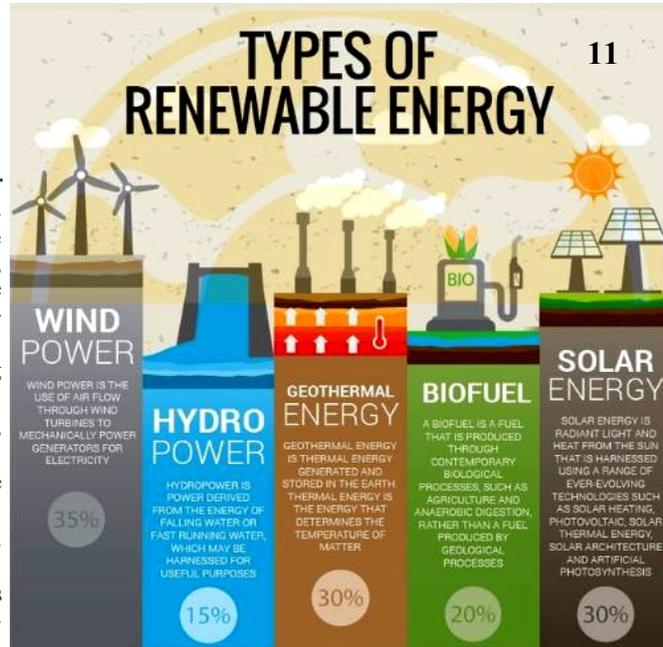
**Breeding:** The isolation and production of superior types known as cultivars are the very keystones of horticulture. Plant breeding, the systematic improvement of plants through the application of genetic principles, has placed improvement of horticultural plants on a scientific basis. The raw material of improvement is found in the great variation that exists between cultivated plants and related wild species. The incorporation of these changes into cultivars adapted to specific geographical areas requires a knowledge of the theoretical basis of heredity and art and the skill to discover, perpetuate, and combine these small but fundamental differences in plant material.

**Environmental control:** Control of the natural environment is a major part of all forms of cultivation, whatever its scale. The basic processes involved in this task have already been described in a preceding section on the principles of gardening, and these also apply to horticulture. The scale, intensiveness, and economic risk in commercial gardening and nurseries, however, often require approaches markedly different from those of the small home garden; and some of these are described here.

**Temperature control:** A number of temperature-control techniques are used in the field, including application of hot caps, cloches, plastic tunnels, and mulches of various types. Hot caps are cones of translucent paper or plastic that are placed over the tops of plants in the spring. These act as miniature green-houses. In the past small glass sash called cloches were placed over rows to help keep them warm. Polyethylene tunnels supported by wire hoops that span the plants are now used for the same purpose. As spring advances the tunnels are slashed to prevent excessive heat buildup.

**Soil management:** The principles involved here are again similar to those of home gardening. But the financial considerations of horticulture naturally require a more scientific approach to soil care. To be successful, the grower must ensure the economic use of every square yard of ground, especially because the cost of sound horticultural land is among the highest of any in agriculture.

**Water management:** Depending on the terrain, water management may involve extensive works for irrigation and drainage. While the home gardener may well be content with a rough-and-ready appraisal of the wetness or dryness of the soil, horticulture is more exacting. Production of the high-quality fruits and vegetables demanded by the modern market requires a precise all-year balance of soil moisture, adjusted to the needs of the particular crop.



## ECO CLUB REPORT 2023-2024

- In connection with World Environment Day, Clean and Green Programme was organized by the Eco Club, Department of Botany on 30th June, 2023 in the botanical garden.
- The Eco Club, Department of Botany organized Haritha Haaram, plantation programme on 6th September, 2023.
- The Eco Club, Department of Botany organized the making and sale of Eco-friendly Ganesh idols and awareness on 21 pathras on 16th September 2023. The idols were kept for two day open sale.

<i>STREAM</i>	<i>STUDENT TEAM LEADER</i>
Promotion of Plantation, Bio-Diversity and Survival Monitoring.	Shriya Amulya
Promoting Clean and Safe Drinking Water	Anusha Keerthana
Energy-Save	Reshmitha Satwika
Effective Land Use	Juliana Shirisha
Promoting Effective Waste Management	Mary Jayamani

### Sub Committee Members of Different streams in Eco Club

1. Promotion of Plantation, Bio-Diversity and Survival Monitoring. - Dr.A.Pramila
2. Promoting Clean and Safe Drinking Water -Dr.Parameshwari
3. Energy-Save - Mrs P.Sandhya
4. Effective Land Use - Ms T.Jaya Madhuri
- 5 Promoting Effective Waste Management - Dr.K.Kiranmai

### Student organization of Eco club

**PRESIDENT** : Ashwitha  
**VICE-PRESIDENT** : Sushma  
**SECRETARY** : Poojitha  
**TRESURER** : Akshara

### Views and Suggestions

We welcome, encourage and value all your suggestions. If any suggestions or ideas to be implemented or articles related to *Ankura* you are most welcome to send us through mail. Please mail it to us on [ecoclub18ams@gmail.com](mailto:ecoclub18ams@gmail.com)

### **Thanks**

We are herewith one more edition of our Eco club News letter - *Ankura* this year. We have been striving to put our steps forward in fulfilling our vision and mission of Eco club. Acknowledging the kind support and encouragement from our Chairperson, Hon.Secretary and Correspondent, Principal, we would like to thank each and every person who helped us in bringing out this news letter.

**Thank You!**

- Editorial committee

### Editorial committee

Dr .A .Pramila (Editor)  
 A.Ashwitha

### Contact

Dr.A.Pramila  
 Eco Club Convenor  
 AMS Arts & Science College for Women  
 Autonomous, NAAC Re-Accredited  
 O.U. Campus Road, Hyd – 07  
 Ph: 9491140329