

ECO-BRICK TECHNOLOGY



VentureVillage

Preparing the next generation

www.venturevillage.in



Who we are ?



- VentureVillage is a Finland based Social Enterprise
- We are promoting Finland education model and co-curricular education
- We opened our India office in Kochi in June 2019
- Current office - Trivandrum, Kowdiar

Finland

Population 5.5 million

Capital Helsinki

- **Happiest country**
- **World's best in Education**
- **World's best in Gender equality**
- **World's best Innovative technologies**



Our Vision and Mission

Vision

- To promote the best Finnish educational practices in the developing world.

Mission

- To equip all students with the skills required to become entrepreneurial citizens, responsible leaders and environmental champions.



Our Co-Curricular Programs



Waste management
and Sustainability



Menstrual Health
and Hygiene



Financial
Literacy and
working life



Oral health and
Hygiene



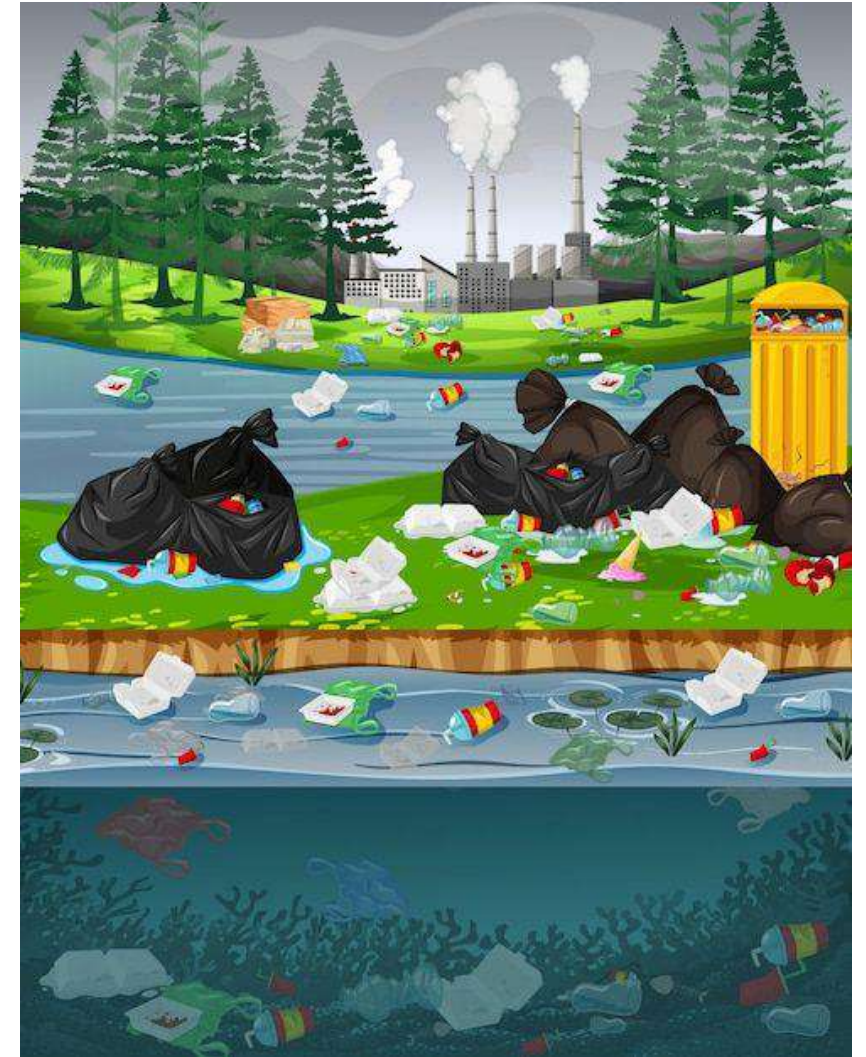
Social
Entrepreneurship and
Circular Economy

Did You Know.....

A million plastic bottles are bought around the world every minute. These bottles are only used once, and then they are put into the trash. This is why we call them single-use plastics, and it is not just plastic bottles. Plastic bags, wrappings, disposable plastic forks, and crisp packets are just a few examples.

These plastics end up in the landfill or environment where they can take up to 400 years to decompose.

They remain in the environment thereby causing harm to humans and animals.



Effects of Plastics on the Environment



- **Land Pollution-** When plastic is dumped in landfills, the chemicals present in them leach into the soil and affects the soil quality. It might take hundreds of years for these plastics to decompose and they can also cause health issues to the people living around.
- **Air Pollution-** Burning of plastic in the open air leads to environmental pollution due to the release of poisonous chemicals. The polluted air, when inhaled by humans and animals, affects their health and can cause respiratory problems and damage their nervous system.
- **Flooding and Water Logging-** Improper disposal of plastics can cause clogging of the drainages which leads to water logging and floods in the city.
- **Entanglement-** Entanglement refers to the wrapping of lines or netting of plastic gears and ropes around the body of an animals, by which their movement gets restricted.
- **Ingestion-** Animals of all kinds ingest plastic by mistaking it as food. This can cause serious harm to them. It affects their digestive system and cause blockages in their intestine.

Where does all the Plastic go.....?



- The plastic that ends up in landfills or environment are often washed into streams, rivers and oceans.
- Scientists have stated that around 14 million tons of plastic end up in the ocean every year causing harm to the marine ecosystem.



By 2050 there will be more plastic in the oceans than there are fish!



Impacts of plastics on the marine ecosystem



- Entanglement-Many marine animals, like whales, dolphins, seals, sea lions, and sea turtles become entangled in fishing gear and other marine debris.
- Ingestion- Marine animals of all kinds ingest plastic. This can cause serious harm to the animals, affecting food uptake by creating blockages in digestive systems, as well as leading to internal injuries.
- Smothering– Plastic pollution deprives corals, sponges and bottom dwelling animals of light, food and oxygen, making sediment oxygen deficient and reducing the numbers of organisms in the sediment. This can have detrimental effects on marine life.
- Chemical Pollution- The harmful chemicals in plastics can leach from the plastics into the marine environment causing marine pollution.



What can we do about it?.....

- Remember the 3R'S- Reduce, Reuse and Recycle
- Make sure we reduce the amount of plastic we are using
- Reuse and Recycle plastic as much as possible

There is another way that use up our single-use plastic rubbish.

Eco-bricks are a new way to use the waste plastic that would otherwise end up in a landfill or in the ocean.



What are Eco-bricks?

- **Eco-bricks are a simple way to take personal responsibility for our plastic by keeping it out of industry and out of the biosphere.**
- **An Eco-brick is a PET bottle packed solid with clean and dry used plastic.**
- **Eco-bricks are made manually to a set density to sequester plastic and create reusable building blocks.**
- **Applications include furniture, walls, columns, buildings, open spaces etc.**





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Why make Eco-bricks?



- Plastic is an incredible material to be wasted
- Eco-bricks sequester Plastics from contaminating the Biosphere
- It inspires Ecological Consciousness.
- Eco-bricks save plastic from Industrial Recycling
- Eco-bricks save plastic from Incineration & Sequester CO2
- Eco-bricks empower Households, Communities & Companies



How to make an Eco-brick?



- Collect, clean and dry plastic waste at home. Items such as foil, cling wrap or any other non-recyclables will be sure to fill up your Eco brick.
- Compress waste into a plastic bottle with a stick. A wooden or bamboo stick does the trick.
- Pack tightly after every level to ensure the waste is properly compacted.
- Squeeze the bottle with your hand to check if it's tight and full enough or tries standing on it to see if it holds your weight.
- Seal tightly with the bottle top.



To be an eco-brick, the following standards must be met:

- The eco-brick is made using a transparent PET bottle
- The eco-brick is only packed with used plastics that have been cleaned and dried.
- The eco-brick's density is higher than 0.33g/ml
- The eco-brick must have a density of 0.70g/ml or less
- The eco-brick is sealed tight with a screw down lid.

Care should be taken to prepare the eco-brick as a reusable building block:

- The label should be removed and ecobricked
- A bottom color should be added
- The weight should be recorded on the outside



Eco-brick Applications



- Eco-bricks can be combined together using motorcycle tyre bands and silicone as short-term, non-permanent attachment methods to create applications that last months to several years.
- Typically for indoor use as they are not covered

Short-term applications

- Eco-brick Milstein Modules
- Eco-brick Dieleman Modules
- Eco-brick Open Spaces





Eco-brick Milstein Modules:

- Easiest, fastest and most fun ecobrick application
- Hexagon and triangle modules that are used for sitting.
- They can be combined together to form one or two level horizontal surfaces.
- Applications include tables, beds, stages, etc.
- They can be stacked one on top of the other to add one level of vertical height.





Eco-brick Dieleman Modules:

- A geometric configuration of 16 eco bricks siliconed together make one DM module
- These modules can be stacked horizontally and vertically indefinitely.
- Dieleman Modules, or DMs , are a way to turn bottles into modular bricks
- They stack one upon the other and enable you to make walls, towers and columns, quickly and easily without any glue or mortar.
- Applications include open spaces , indoor playgrounds, building structures for concerts , fairs etc.



Eco-brick Open Spaces:

- A combination of hundreds of Milstein and Dieleman modules that enable the creation of interactive social spaces.
- These modules can then be deployed for conferences, exhibitions, fairs and other special events to create customized interactive spaces.



Maintenance of short term configurations-

- All these modules should be cleaned once a year.
- Broken modules can be repaired with silicone.
- Well-used eco-brick modules will last 2-3 years. After this time, the silicone joints began to weaken and to fail. Eco-bricks also begin to lose their lustre as the colors of the contained plastic begin to fade. This is a good opportunity to transition them to long term building applications where they are fully protected with earth.
- Short term modules should be indoor or in covered spaces only. The UV rays in sunlight will degrade and fade your eco-bricks and weaken the bottle's plastic





Long-term applications

- Eco-bricks can be used with Earth building techniques (i.e. cob, wattle and adobe) to create structures that can last years or decades.
- This method is strong, earthquake resilient, allows curved walls and designs
- Earth mixes are used in between horizontally and vertically laid ecobricks as mortar.
- The Earth Building technique can completely cover ecobricks, effectively securing them .
- This keeps them safe from UV light and other forms of degradation.
- After 10, 20 or 100 years, when the structure comes to its end the ecobricks can be extracted and fully repurposed

Applications of long-term ecobrick applications include:

- Raised gardens
- Raised benches
- Play Parks
- Walls



Maintenance


- Earth modules need to be regularly inspected.
- Cracks and breaks to the wall are best quickly repaired to avoid erosion to the structure.



Advantages of Eco-bricks

- Plastics are durable in nature, hence ecobricks provide longevity.
- Low energy solution to plastic waste
- They do not require capital or technology
- As plastics remain the same for 500 years, eco bricks will never break down.
- Reduces the harmful effects of plastic degradation
- Prevents plastic from burning and thereby reduces global warming
- Enable people to manage plastic waste on their own





**Let us all stand together to take action against plastic pollution.
The fate of the planet is in your hands.
You are the future heroes. You are the
changemakers.
We hope to see you all as environmental champions!
Good luck to all of you!**

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Thank you!

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