ECO-CLUB MODEL

Exhibition Report-2025

Implementing Agency - EEP:

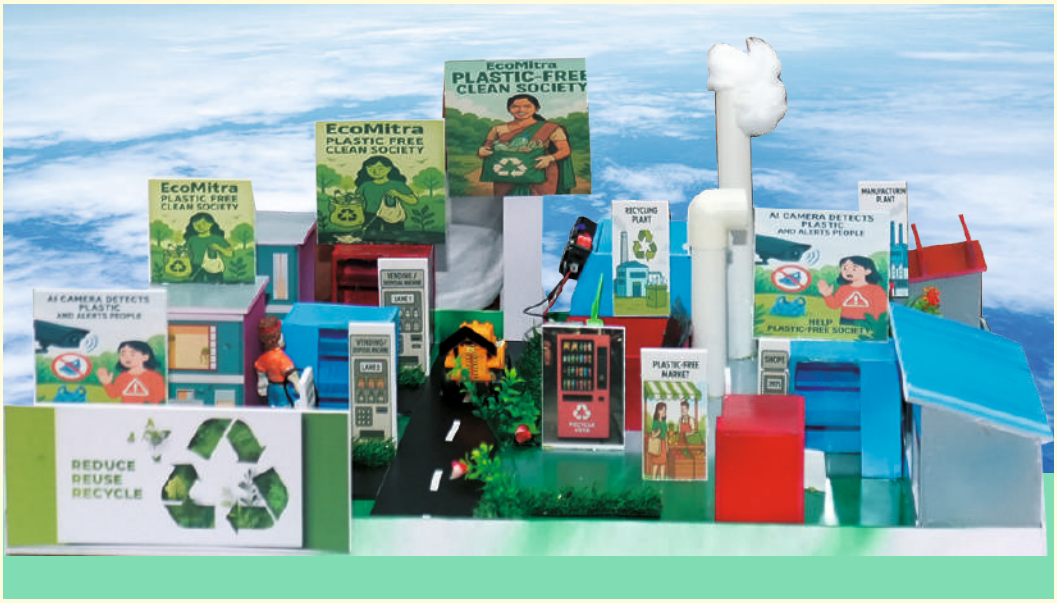
Centre For Environmental Studies (CES)

Forest, Environment & Climate Change Department, Govt. of Odisha

FE&CC Dept | CES, Odisha | ENDING PLASTIC POLLUTION | WORLD ENVIRONMENT DAY - 2025 | LiFE Lifestyle for Environment | ENVIRONMENT EDUCATION PROGRAMME

ECO-CLUB MODEL

Exhibition Report-2025



Implementing Agency-EEP:
CENTRE FOR ENVIRONMENTAL STUDIES
Forest, Environment & Climate Change Department
Government of Odisha, Bhubaneswar

FE&CC Dept

Shri Satyabrata Sahu, IAS
Additional Chief Secretary
Forest, Environment & Climate Change Department
Government of Odisha

MESSAGE

World Environment Day, celebrated every year on June 5th, unites people across the world in a shared commitment to environmental protection. From grassroots initiatives to national campaigns, it is a moment to reflect, engage, and act on the most pressing ecological challenges of our time.

This year's theme, “Beat Plastic Pollution,” continues to emphasize urgent action against one of today's most serious environmental threats. It calls upon all of us to evaluate our lifestyle choices and adopt sustainable alternatives to reduce plastic waste.

This publication is a curated collection of model exhibits prepared by Eco-Club students under Environment Education Programme (EEP) from various districts of Odisha. Through their creative and thought-provoking models, these young minds have conveyed their understanding and vision for practical solutions to plastic pollution.

These models, presented during the state-level exhibition, are not just displays, they are voices of the future echoing the need to eliminate single-use plastics and embrace sustainable alternatives. The insights and messages embedded in these models are powerful reminders that small steps taken collectively can lead to big changes.

We hope this compilation inspires readers to reflect, respond, and take real action against plastic pollution in their own lives and communities.

Wishing the publication and its contributors all success in spreading this vital message.

(Satyabrata Sahu)

FE&CC Dept

Dr. K. Murugesan, IFS
Director
Centre for Environmental Studies
Forest, Environment & Climate Change Department
Government of Odisha

PREFACE

It is encouraging to see the Centre for Environmental Studies (CES), under the Department of Forest, Environment & Climate Change, Government of Odisha, bringing out this meaningful publication featuring model exhibits created by Eco-Club students under Environment Education Programme (EEP), in celebration of World Environment Day 2025.

World Environment Day (WED) is recognized globally as the most impactful platform for environmental awareness and action. It empowers individuals to connect with nature, reflect on their responsibilities, and take charge as agents of change for a sustainable and equitable future.

To organize the State Level Eco Model Exhibition, CES earlier organised District Level & Block Level Model Exhibitions through Environment Education Programme (EEP). Selected schools from Block proceeded to the District Level Model Exhibitions, organized by the respective District Education Officers (DEOs). From each district, one winner was nominated to the State Level Model Exhibition by their DEO, giving students the opportunity to showcase their innovative eco-models at the state level. This multi-tiered process enabled students to demonstrate their creativity and environmental awareness, with the best models advancing to the state-level exhibition.

Each model featured in this compilation represents the best from its respective district, thoughtfully designed and skillfully presented. These creative expressions effectively convey the urgency of addressing plastic pollution and reinforce the global campaign to "Beat Plastic Pollution." The voices and visions of the Eco-Club students, captured through these models and messages, will undoubtedly leave a lasting impression on readers and inspire them to act starting with reducing single-use plastics in their daily lives.

Eco-Clubs, educational institutions, and the wider public all have a critical role in creating a cleaner and healthier Odisha. This publication is a timely and commendable step toward realizing that goal. I hope this initiative contributes meaningfully to raising awareness and driving change. Let us pledge to eliminate single-use plastics and take action at every level to combat plastic pollution.

I extend my sincere thanks to the EE Division of the Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India, for providing opportunity to compile this report under Environment Education Programme (EEP).

(Dr. K. Murugesan)

CONTENT

Introduction

Inspiring innovation among youth is crucial for a sustainable environmental future. World Environment Day 2025, observed on June 5, emphasizes the importance of environmental protection and sustainability. This year's theme, "Beat Plastic Pollution," encourages individuals and communities to take action against plastic waste.

To mark the occasion, the Centre for Environmental Studies (CES) successfully conducted a State-level Eco Model Exhibition, inviting participation from schools across Odisha. To streamline the process, CES earlier organized District and Block Level Model Exhibitions through the Environment Education Programme (EEP). Selected schools from the block level proceeded to the district exhibitions, organized by the respective District Education Officers (DEOs). From each district, one winner was nominated to the state-level exhibition by their DEO, giving students the opportunity to showcase their innovative eco-models at the highest platform. This multi-tiered approach enabled students to demonstrate their creativity and environmental awareness, with the best models advancing to the state-level event. Participants also received technical mentoring via virtual orientation, where they were guided on refining their models and preparing for final evaluation.

World Environment Day 2025 celebrations highlighted young innovators' creativity and commitment to sustainability. This year's models stood out not only for their technical sophistication but also for the students' passion in addressing the pressing issues of climate change and plastic pollution.

The exhibits showcased innovative solutions to tackle plastic waste and promote sustainability. Notable ideas included plastic bricks for road construction to improve durability while reducing waste, and eco-bricks made from plastic, plant-based bioplastics, and sal-leaf plates as practical alternatives to single-use plastics. Although not directly displayed, concepts like electricity generation from plastic road infrastructure through piezoelectric flooring reflected futuristic thinking for sustainable energy. These examples underscore the practical ingenuity and vision of Odisha's youth.

This year's exhibition was not just a display of talent but a strong reminder of the transformative role of young innovators in championing environmental conservation and ending plastic pollution, paving the way for a greener tomorrow.

Model 01

Angul District

Beat Plastic Pollution By Reduce and Reuse Plastic

Aim

The aim of the model exhibition is to showcase innovative and creative solutions to reduce plastic pollution, promoting awareness and inspiring action among visitors. The theme "Beat Plastic Pollution" highlights the urgent need to address the plastic waste crisis, and the sub-theme "Reduce Reuse Recycle" emphasizes practical strategies for mitigating plastic pollution.

Objective

The objective of the exhibition is to demonstrate effective ways to reduce plastic waste, reuse plastic materials, and promote sustainable practices. By showcasing models and projects that utilize recycled plastic materials.

Methodology

The exhibition features a range of models and projects that demonstrate creative ways to reduce, reuse, and recycle plastic. Some of the notable exhibits include:

Swarnaprava Sahu
Class-x
Brajamohan High School, Jarada
Guide Teacher: Manoj Kumar Sahoo

- **Bamboo Brush**: A model showcasing a bamboo toothbrush, highlighting the potential for sustainable alternatives to plastic toothbrushes.
- **Pen Stand made of Plastic:** A pen stand crafted from recycled plastic materials, demonstrating the possibility of transforming waste into useful products.
- **Eco-Bricks:** A display of eco-bricks made from single-use plastic bottles filled with non-biodegradable waste, showcasing a potential solution for managing plastic waste.
- **Plant Saplings in Half Plastic Bottles:** A model featuring plant saplings grown in half plastic bottles, illustrating the potential for repurposing plastic waste for gardening and greening initiatives.
- **Paper Bags:** A display of paper bags as an alternative to single-use plastic bags, promoting a shift towards more sustainable packaging options.
- **Road made of Waste Plastic, Rock Chips, and Bitumen:** A model showcasing a road constructed using waste plastic, rock chips, and bitumen, highlighting a potential solution for managing plastic waste and improving infrastructure.

Conclusion

The model exhibition "Beat Plastic Pollution" successfully showcases innovative solutions to reduce plastic waste, promote sustainable practices, and inspire community action. By highlighting creative ways to reuse and recycle plastic materials, the exhibition demonstrates the potential for individuals and communities to contribute to a more sustainable future. The exhibition serves as a powerful tool for raising awareness and promoting action against plastic pollution, inspiring visitors to make a positive impact on the environment.

The students of Govt. High School, Khalina, have developed an innovative Smart Plastic Waste Management Model that showcases a practical solution to tackle plastic pollution. This model integrates smart segregation, plastic recycling, and pyrolysis technology, demonstrating a comprehensive approach to waste management.

Aim

To develop a practical solution for tackling plastic pollution through innovative waste management.

OBJECTIVES:

1. To design a comprehensive waste management model integrating smart segregation, recycling, and pyrolysis technology.
2. To educate and engage the community in proper waste segregation and management practices.
3. To demonstrate the potential for converting non-recyclable plastic into usable fuel.

Shibashish Seet
Class-x
Govt. High School, Khalina
Guide Teacher: Paramananda Raul

METHODOLOGY:

1. Source-Level Segregation: Color-coded bins were used to promote easy separation of waste.
2. Plastic Pyrolysis Unit: A demonstration unit was set up to convert non-recyclable plastic into fuel oil and gas.
3. Smart Waste Tech: Sensors and data-driven tracking were simulated to improve collection and reduce landfill use.
4. Educational Posters: Visual aids were created to educate the audience about plastic's impact and alternative uses.

RESULT:

The Smart Plastic Waste Management Model achieved significant impact:

1. Inspired schools and local community members to start segregating waste at home.
2. Selected as one of the top models in the district-level exhibition, receiving appreciation for innovation and clarity.
3. Garnered interest from local media and teachers' groups, who are keen to replicate the idea.

IMPACT AND RECOGNITION

The model has made a significant impact by inspiring schools and local community members to start segregating waste at home. It was selected as one of the top models in the district-level exhibition, receiving appreciation for its innovative approach and clarity in presentation. The project's success has also garnered interest from local media and teachers' groups, who are keen to replicate the idea for community education.

CONCLUSION:

The Smart Plastic Waste Management Model demonstrates the potential for innovative solutions to address environmental challenges. This project serves as a call to action for a cleaner, smarter, and greener future, showcasing the impact young minds can have with the right guidance and purpose. The model's success highlights the importance of community engagement, education, and technology in promoting sustainable waste management practices.

Bargarh District

Model 03

Plastic Waste-to-Energy Conversion

Aim

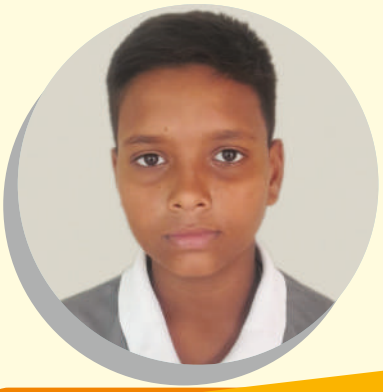
The aim of this model exhibition is to demonstrate an innovative and eco-friendly method of generating electricity by converting non-recyclable plastic waste into energy using pyrolysis technology. The theme "Beat Plastic Pollution" highlights the urgent need to address the plastic waste crisis, and the sub-theme "Plastic Waste-to-Energy Conversion" emphasizes the potential for sustainable solutions to mitigate plastic pollution.

Objective

The objectives of this model exhibition are:

- To create awareness about plastic waste as a serious environmental concern
- To showcase a sustainable technique to convert plastic into useful energy
- To reduce dependency on conventional fossil fuels by utilizing waste plastic
- To promote the concept of circular economy and smart waste management

By achieving these objectives, the model aims to inspire visitors to think creatively about waste management and energy production.



Ayushman Dash
Class-VIII
Govt. UGHS, Lebidi
Guide Teacher: Tankadhar Padhan

Methodology

The model consists of several key components:

- **Segregation Area:** Plastic waste is collected and sorted, with some of it stored in a chamber.
- **Pyrolysis Unit:** A chamber (wrapped in foil) represents a pyrolysis reactor, where plastic is heated in the absence of oxygen, breaking it down into gases, oils, and char without combustion.
- **Conversion System:** The vapors and gases are directed through pipes to a small power plant model labeled "Electricity from Plastics," which represents turbines / generators that convert the produced gas into electricity.
- **Emission System:** Chimneys with filters indicate minimal environmental impact, highlighting the potential for clean energy production.

The model may also feature a display of the final output, such as a light or fan powered by the electricity generated from plastic waste.

Conclusion

The "Electricity from Plastics" model encourages green technology by converting harmful plastic waste into usable electricity. This innovative solution demonstrates a practical, scalable, and eco-conscious approach to plastic pollution, contributing to renewable energy production. By showcasing this model, we can inspire visitors to think differently about waste management and energy production, promoting a more sustainable future.

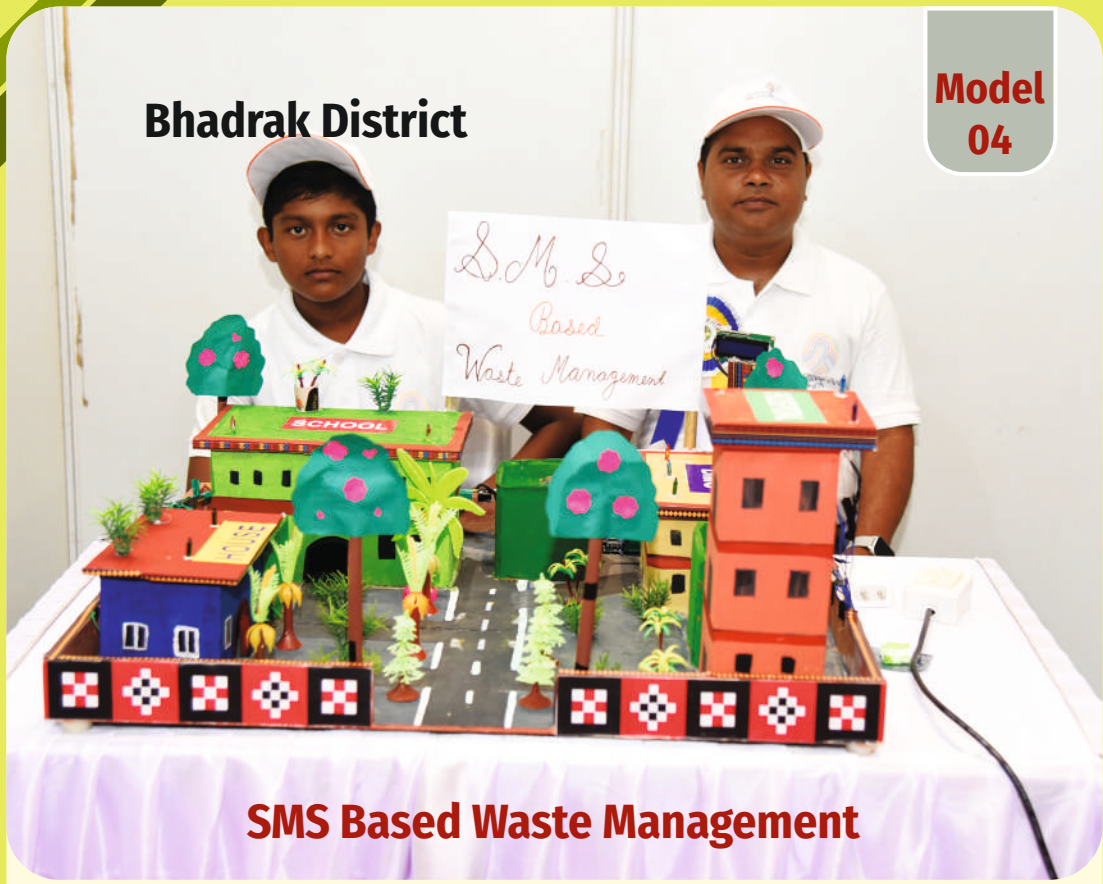
The potential benefits of this technology include:

- Reducing landfill plastic
- Minimizing environmental hazards
- Supporting rural and urban clean energy goals

By adopting such innovative solutions, we can make a significant impact on reducing plastic pollution and promoting sustainable development.

Bhadrak District

Model 04



SMS Based Waste Management

AIM

The aim of this model exhibition is to demonstrate how waste management can be improved using mobile technology (SMS alerts) in a structured urban environment, promoting cleanliness and efficiency. The theme “Beat Plastic Pollution” highlights the urgent need to address the plastic waste crisis, and the sub-theme “Smart Waste Management” emphasizes the potential for technology to mitigate waste management challenges.

OBJECTIVE

The objectives of this model exhibition are:

- To reduce manual waste collection delays
- To use SMS alerts for timely waste bin collection
- To create awareness about smart city solutions for a cleaner environment
- To demonstrate the role of technology in environmental management

Omprakash Moharana
Class-X
Satabhauni Ucha Bidyapitha, Bhadrak
Guide Teacher: Jagannath Patra

By achieving these objectives, the model aims to inspire visitors to think creatively about waste management and the potential for technology to improve urban sanitation.

METHODOLOGY

The model consists of several key components:

- City Layout: A miniature city setup featuring buildings labelled as SCHOOL, HOUSE, MUNICIPAL BUILDING, SHOPS, etc., arranged on either side of a road with decorative trees.
- Smart Bins: Conceptual waste bins equipped with sensors (in a real-world version) to detect waste levels, sending alerts when the bins are full.
- SMS Alert System: When the bins are full, an alert is sent via SMS to the municipality or waste collection team, ensuring timely waste pickup.
- Monitoring: Waste level data is received and monitored remotely using mobile phones or computer systems, enabling efficient waste management.
- The model demonstrates how digital tools like SMS and IoT can help improve urban sanitation, promoting a cleaner and more responsive environment.

CONCLUSION

The SMS Based Waste Management model showcases an innovative solution for efficient waste management in urban environments. By leveraging mobile technology and sensor-based waste bins, this model demonstrates the potential for smart cities to reduce waste management challenges and promote a cleaner environment. The model's emphasis on timely waste collection and remote monitoring highlights the importance of technology in environmental management, inspiring visitors to think differently about waste management and urban planning.

Eco-Friendly Indigenous Crafting and Cooking Model

AIM

The aim of this model is to demonstrate the use of indigenous knowledge and traditional methods for creating sustainable, biodegradable products and cooking aids using locally available natural resources. The model showcases environmentally friendly alternatives to plastic and metal utensils, promoting a more sustainable lifestyle.

OBJECTIVES

The objectives of this model are:

- To showcase environmentally friendly alternatives to plastic and metal utensils
- To promote the use of plant-based materials (like banana leaves, palm leaves, and bamboo stems) in daily utility products
- To educate on traditional cooking techniques using natural materials
- To preserve and promote indigenous knowledge systems

Swapnendu Padhi
Class-IX
Odisha Adarsh Vidyalaya, Duduka
Guide Teacher: Dillip Kumar Dhal

By achieving these objectives, the model aims to inspire visitors to think creatively about sustainable living and the potential for traditional knowledge to inform modern practices.

METHODOLOGY

The model consists of several key components:

- **Collection of Materials:**

Banana leaves, palm leaves, coconut leaves, and bamboo stems are collected, showcasing the use of locally available natural resources.

- **Preparation:**

Leaves are sun-dried slightly to soften them without making them brittle, and then flattened using a heavy object. Natural fibers are used to tie and weave them into desired shapes.

- **Crafting:**

Using simple hand tools and weaving methods, baskets, plates, and packaging items are made. These items are strong, light-weight, and reusable.

- **Cooking Demonstration:**

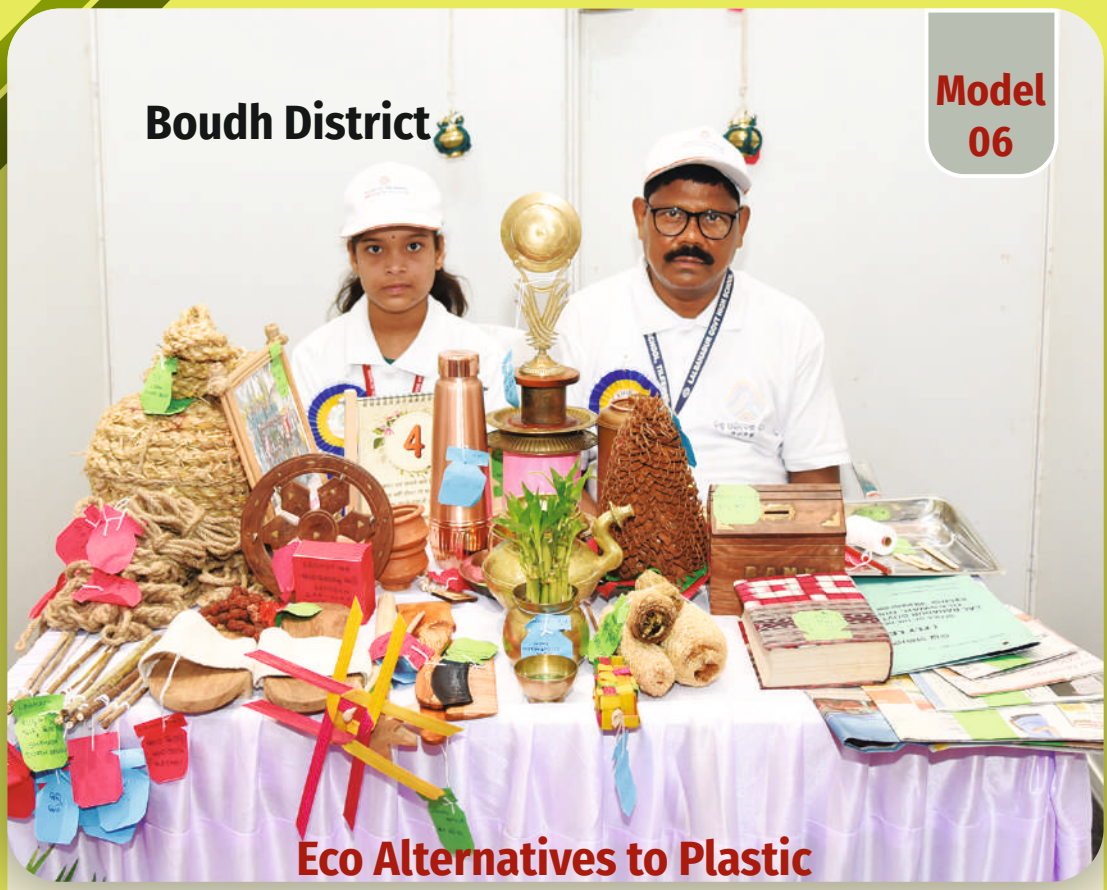
Small wooden stands or skewers are used to place the food-filled leaf packages over heat for steaming or roasting, retaining nutrients and adding flavor.

CONCLUSION

The Eco-Friendly Indigenous Crafting and Cooking Model promotes a return to nature by embracing traditional knowledge systems that are sustainable, eco-friendly, and cost-effective. By showcasing the potential for natural materials and traditional practices to inform modern sustainable living, this model inspires visitors to think differently about waste management and sustainable development.

Boudh District

Model 06



Eco Alternatives to Plastic - A Step towards Sustainability

AIM

The aim of this model exhibit is to promote awareness about practical, eco-friendly alternatives to plastic and encourage behavioural change among consumers. By showcasing a wide range of alternatives to commonly used plastic items, the exhibit aims to inspire individuals and institutions to switch to sustainable options.

OBJECTIVES

The objectives of this model exhibit are:

- To showcase how traditional materials can be reintroduced in modern life
- To reduce dependency on plastic by promoting biodegradable and reusable items
- To inspire individuals and institutions to switch to sustainable options

Sriya Danga
Class-X
Lalbahadur Govt. High School, Tileswar
Guide Teacher: Ramesh Ku. Samal

By achieving these objectives, the exhibit aims to demonstrate real-world, scalable solutions to reduce plastic waste and promote sustainable living.

METHODOLOGY

The methodology used to create this model exhibit includes:

- Sourcing and collecting eco-friendly products from different sectors
- Categorizing them based on usage (household, school, kitchen, etc.)
- Labelling and showcasing each item with its plastic counterpart (e.g., steel straw vs. plastic straw)

The exhibit features over 72 eco-friendly alternatives to plastic, categorized into:

Packaging: Paper envelopes, jute bags, cloth bags, palm leaf containers,

Kitchen & Household: Copper bottles, terracotta cups, wooden utensils, coconut shell bowls, plant-based scrubbers,

Stationery: Paper pens, seed pencils, cardboard files,

Decoration & Crafts: Handmade ornaments, bamboo decorations, coir mats,

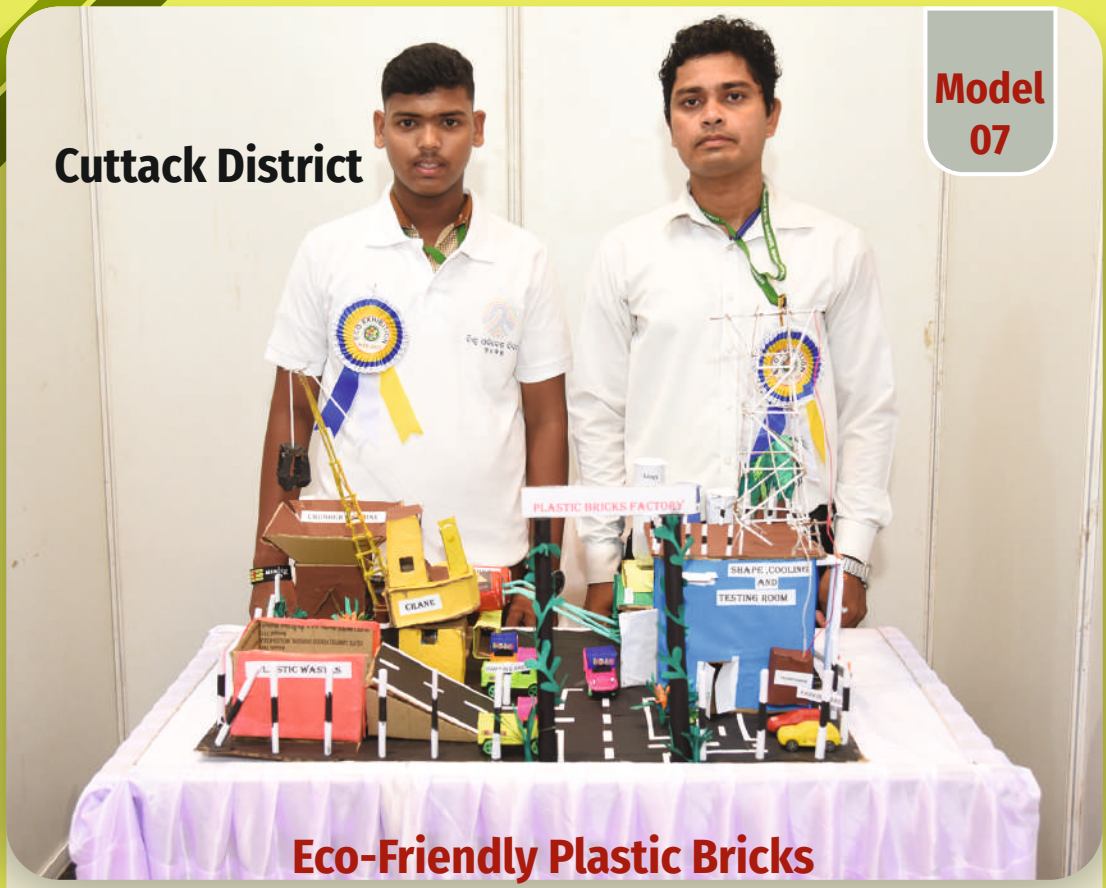
Toys: Wooden and paper-based toys replacing plastic play items

CONCLUSION

The "Eco Alternatives to Plastic" model exhibit is a living example of "Beat Plastic Pollution". It encourages a lifestyle that respects nature and adopts environmentally responsible habits. The exhibit serves as an excellent educational tool that merges creativity, sustainability, and activism, inspiring visitors to make a positive impact on the environment.

Cuttack District

Model 07



Eco-Friendly Plastic Bricks for Sustainable Construction

INTRODUCTION

As urbanization increases, so does the need for construction materials. Simultaneously, plastic waste is choking ecosystems and overflowing landfills. This project merges innovation with environmental responsibility by turning waste into wealth transforming plastic into usable building materials.

This innovative model presents a sustainable and practical solution to two pressing environmental challenges: plastic pollution and the demand for affordable construction materials. The concept involves recycling plastic waste to manufacture eco-friendly bricks, which are not only durable but also cost-effective and water-resistant.

Somanath Barik
Class-X
Sidheshwar Vidyamandir, Naraj
Guide Teacher: Niranjan Dalai

OBJECTIVE

The objective of this project is to develop plastic-sand composite bricks as a green alternative to traditional clay or cement bricks to Reduce plastic waste & to Promote sustainable construction practices

METHODOLOGY

The model demonstrates the step-by-step process of brick manufacturing:

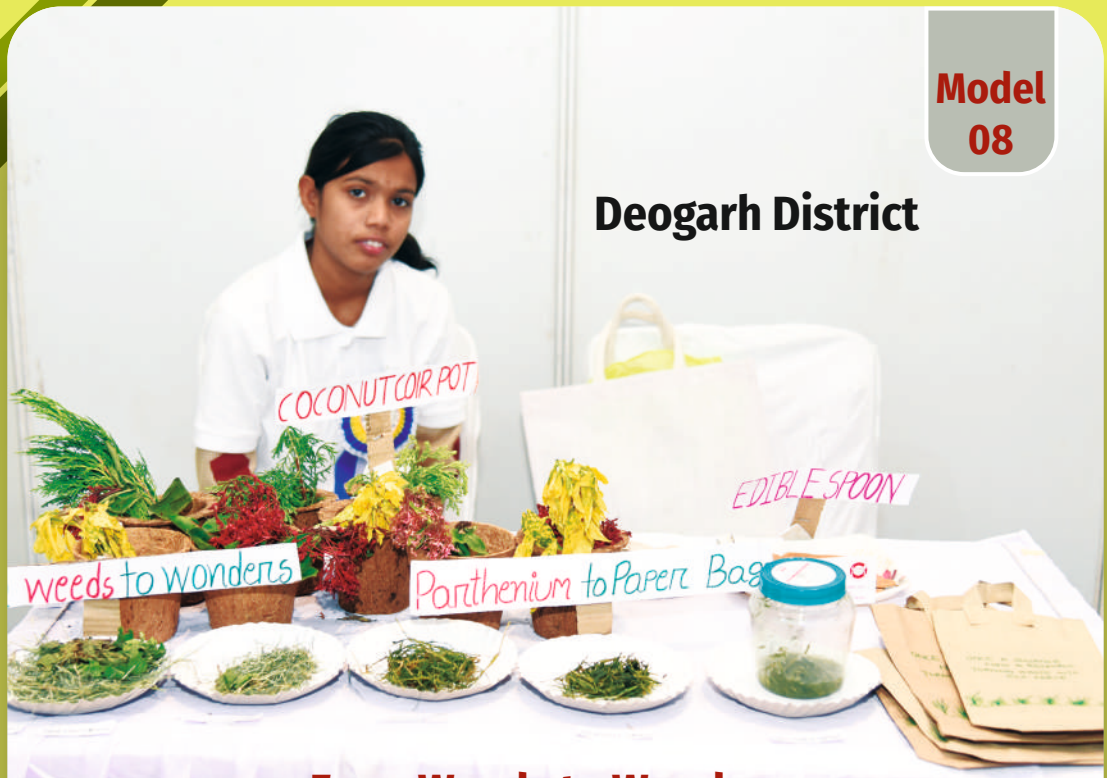
1. **Collection & Sorting:**
   Plastic types like PET, HDPE, and LDPE are collected and sorted.
2. **Cleaning & Shredding:**
   Plastics are washed and shredded into small granules.
3. **Melting & Mixing:**
   The shredded plastic is heated and mixed with sand in a typical ratio of 3:7.
4. **Moulding:**
   The molten mixture is poured into brick moulds.
5. **Cooling & Testing:**
   After cooling, the bricks are tested for compressive strength, water resistance, and durability.

CONCLUSION

This model can be replicated in schools, homes, and community awareness programs, promoting a sustainable lifestyle and inspiring future innovations in green infrastructure. By turning plastic waste into a valuable construction resource, this project contributes meaningfully to the global movement of "Beat Plastic Pollution.

Model 08

Deogarh District



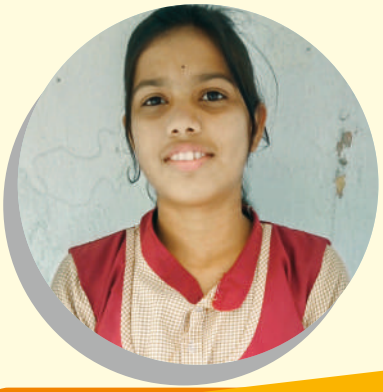
From Weeds to Wonders: Eco-Friendly Alternatives to Plastic

INTRODUCTION

The model highlights a creative and eco-conscious response to plastic pollution, showcasing natural and biodegradable alternatives to harmful plastic items. By promoting sustainable practices in daily life, this exhibit encourages individuals to think differently about waste management and environmental conservation.

PROJECT CONCEPT

The concept is based on converting waste or natural materials into useful eco-products, reducing dependency on plastic. The student demonstrates how weeds like parthenium and coconut waste can be transformed into biodegradable everyday items, such as:



Tulasi Biswal
Class-X
Govt. High School, Reamal
Guide Teacher: Geetanjali Bhoi

- Coconut Coir Pot: Made from coconut coir, corn flour, and vinegar, this pot is sturdy, decomposable, and supports plant growth.
- Edible Spoon: Made from wheat, millet, and rice flour, this spoon is safe to eat and biodegradable.
- Parthenium Paper Bag: Made from parthenium grass and washing soda, this bag is a sustainable replacement for polythene bags.

METHODOLOGY:

1. **Coconut Coir Pot:**

   Mixing coconut coir with corn flour and vinegar, shaping into a pot, and sun-drying for 2-3 days.

2. **Edible Spoon:**

   Mixing wheat, millet, and rice flour, shaping into spoons using molds, and baking using a micro-oven.

3. **Parthenium Paper Bag:**
   Boiling and grinding parthenium leaves with washing soda, processing the pulp into sheets, and molding into bags.

CONCLUSION

This model demonstrates rural innovation and sustainability, showcasing the potential for natural materials to replace plastic. By adopting these eco-friendly alternatives, individuals can contribute to a larger movement towards environmental conservation and sustainability.

Model 09

Dhenknal District

Plastic Free Cultural Programme

The Plastic-Free Cultural Programme is an innovative project that combines environmental awareness with cultural celebration, showcasing a model for sustainable event management. This initiative aims to inspire schools, local bodies, and event organizers to adopt plastic-free practices in decorations, catering, and props, promoting a cleaner and more eco-friendly approach to cultural events.

MODEL DESCRIPTION

The model features a miniature setup of a cultural stage and surroundings, highlighting natural and eco-friendly elements such as:

- Natural decorations: plants, clay lamps, and flower garlands made from biodegradable materials
- Eco-friendly items: copper utensils, steel water bottles, terracotta and brass items, wooden and bamboo spoons, cloth bags, and paper-based materials

This setup showcases traditional Indian lifestyle practices that are practical, sustainable, and non-polluting, offering alternatives to plastic.

Jijnasa Baral
Class-X
Batagaon GP High School, Batagaon
Guide Teacher: Padan Ch. Sahoo

Purpose of the Plastic-Free Cultural Programme

The Plastic-Free Cultural Programme is designed to achieve three key objectives:

1. **Showcase plastic-free events:** Demonstrate how cultural events can be organized without plastic, providing a practical example for others to follow.
2. **Promote eco-conscious behavior:** Encourage individuals, especially youth, to adopt environmentally friendly practices and develop a mindset that prioritizes sustainability.
3. **Revive traditional alternatives:** Highlight and promote traditional Indian practices and materials that are aesthetic, environmentally safe, and sustainable, offering viable alternatives to plastic.

IMPACT

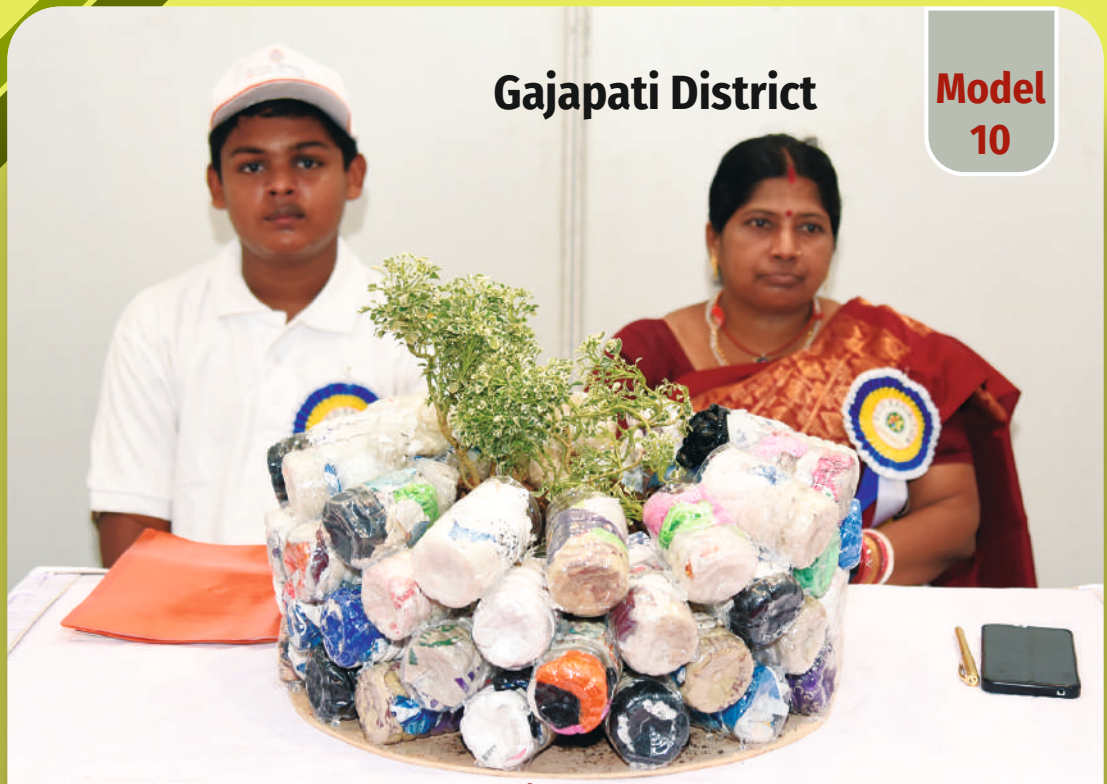
1. **Encourage eco-friendly event management:** By showcasing a plastic-free cultural programme, the project can inspire schools and communities to adopt eco-friendly practices in event management, reducing plastic waste and promoting sustainability.
2. **Demonstrate zero-plastic celebrations:** The practical model provided by the project can demonstrate that it is possible to celebrate cultural events without plastic, providing a tangible example for others to follow.
3. **Foster eco-leadership and awareness:** By involving students in the project, it can help foster eco-leadership and raise awareness about plastic pollution among young people, empowering them to become agents of change in their communities.

CONCLUSION

The Plastic-Free Cultural Programme model beautifully merges tradition with eco-consciousness, encouraging people to rethink everyday practices during events and shift towards sustainable alternatives. By adopting such practices, we can make every celebration a step toward a plastic-free planet.

Gajapati District

Model 10



Eco Bricks from Non Biodegradable Plastics

PROJECT CONCEPT

The model showcases a circular structure made from "eco-bricks"—plastic bottles tightly filled with non-biodegradable plastic waste. This design demonstrates how single-use plastic can be transformed into durable construction material, reducing plastic pollution. Model Display a circular stool or planter base made from neatly packed eco-bricks, with a small green plant in the center, symbolizing “life from waste.”

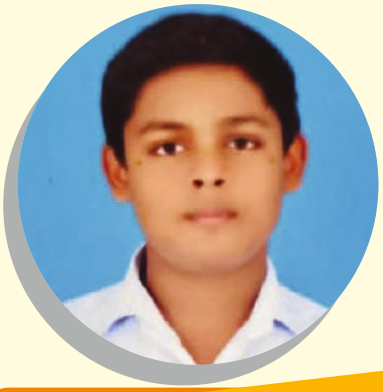
METHODOLOGY

The preparation of eco-bricks involves the following steps:

1. Collection of plastic bottles: Gather clean plastic bottles (PET) from various sources.

2. Stuffing with non-recyclable plastic waste: Fill the bottles with soft, non-recyclable plastic waste, such as plastic wrappers, bags, and packaging materials, until they are densely packed.

3. Capping the bottles: Once filled, cap the bottles tightly to form "bricks" that can be used as building blocks.



Sagar kumar Behera
Class-X
M.R.boys High School Paralakhemundi
Guide Teacher: Pratima Sahu

BENEFITS

The use of eco-bricks offers several benefits, including:

1. **Reducing plastic waste:** Eco-bricks help reduce the amount of plastic waste sent to landfills and prevent plastic pollution in the environment.
2. **Promoting recycling and reuse:** The project encourages recycling and reuse of plastic waste at the school and community level.
3. **Environmental awareness and participation:** The project promotes environmental awareness and hands-on participation among students, fostering a sense of responsibility towards the environment.
4. **Cost-effective building material:** Eco-bricks can be used as a cost-effective building material for rural or low-cost construction needs.

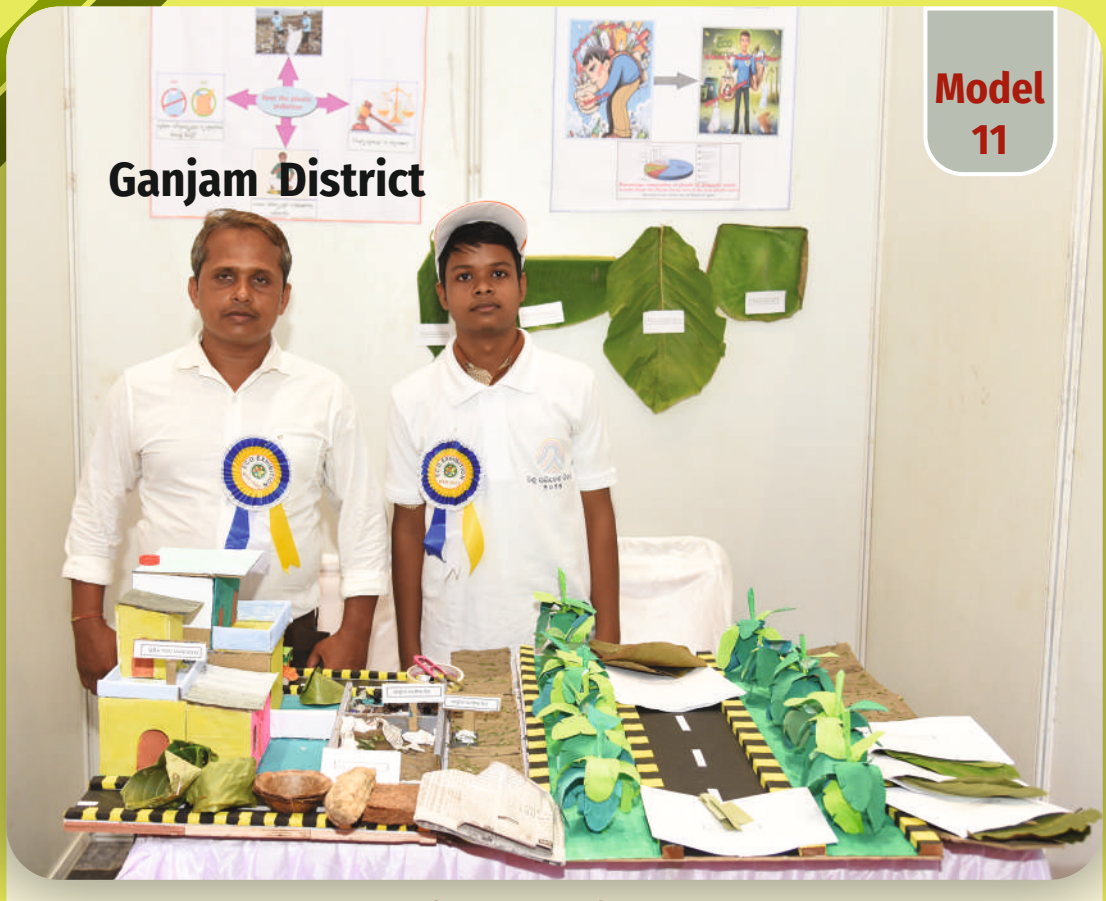
APPLICATIONS

Eco-bricks can be used in a variety of applications, including:

1. **Eco-friendly school furniture:** Eco-bricks can be used to create furniture for schools, such as stools, chairs, and tables.
2. **Boundary walls:** Eco-bricks can be used to build boundary walls for schools, parks, and other community spaces.
3. **Garden edging:** Eco-bricks can be used to create decorative edging for gardens and parks.
4. **Community park installations:** Eco-bricks can be used to create park benches, planters, and other installations.
5. **Awareness drives and plastic collection campaigns:** The project can be used to raise awareness about plastic pollution and promote plastic collection campaigns in schools and communities.

CONCLUSION

The eco-bricks project demonstrates a creative and practical solution to managing plastic waste. By transforming non-biodegradable plastics into durable building blocks, we can reduce plastic pollution, promote sustainability, and contribute to a cleaner environment.



Plant Products:
An Ideal Alternative for Single-Use Plastics

INTRODUCTION

This model demonstrates how locally available plant-based materials can replace harmful single-use plastic products, promoting a self-sustainable, toxin-free lifestyle and reducing environmental degradation caused by plastic.

The model features a miniature village setup with homes, roads, and greenery, showcasing a "Plastic Waste Restaurant" that demonstrates eateries can function without plastic utensils, and a "Collective Compost Pit" for community-level biodegradable waste management. The model also displays plant-based substitutes like banana leaves as plates, leaf bowls, natural scrubbers, and packaged items using teak or sal leaves, highlighting practical alternatives to single-use plastics.

Roshan Kumar Maharana
Class-X
SSG Nodal Bidyapitha, Dhunkapada
Guide Teacher: Dr. Umakant Behera

SCIENTIFIC EXPLANATION

The model showcases various plant-based alternatives, including:

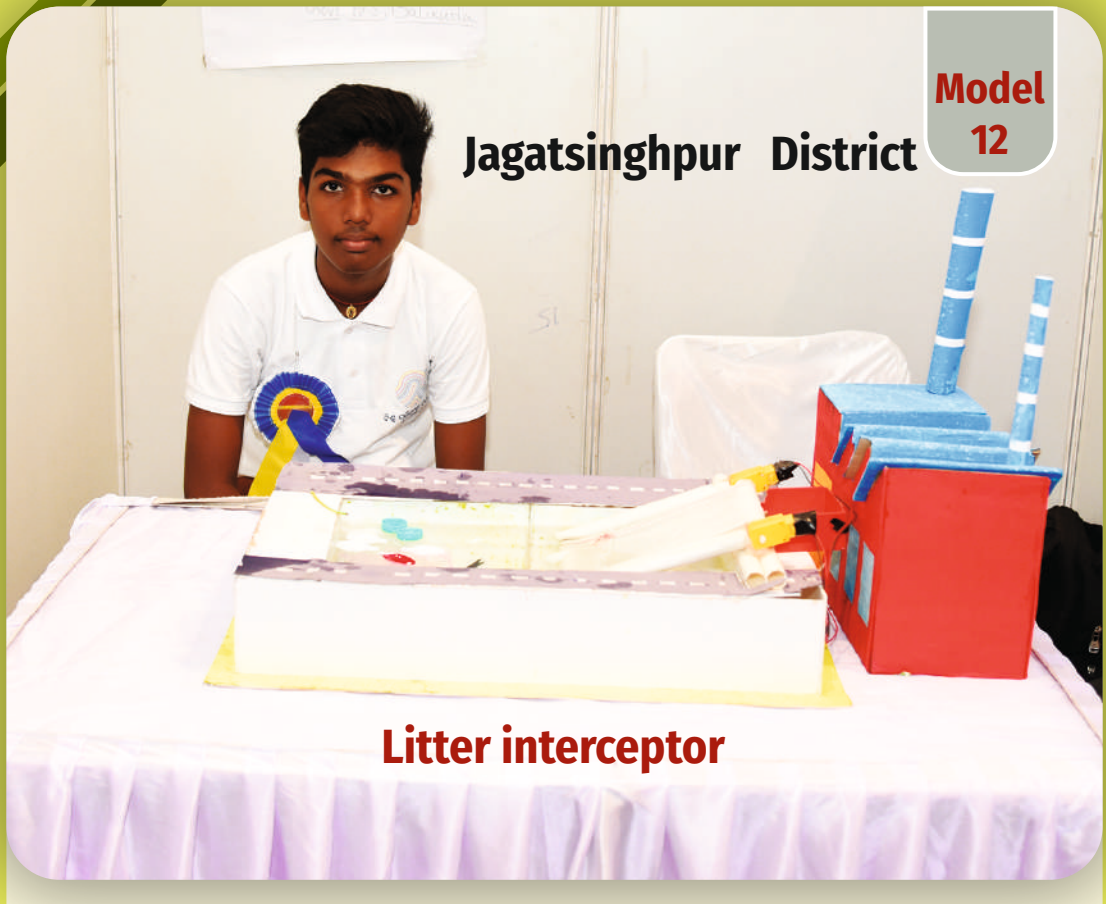
- **Banana Leaves for Dining:** Substitute for plastic plates during feasts and public events, providing an additional income source and protecting roadside crops.
- **Leaf Plates & Bowls:** Biodegradable, toxin-free, and aesthetically pleasing for food serving, made from locally available leaves.
- **Palm Leaves as Natural Spoons:** Naturally shaped and durable, suitable for direct use in hotels and hostels.
- **Teak Leaves for Packaging:** Fresh green leaves can wrap meat/fish as an alternative to polythene.
- **Ridge Gourd (Luffa) as Scrubbers:** Natural kitchen and bathroom scrubber, replacing synthetic plastic scrubbers.

CONCLUSION

This model promotes sustainable alternatives to single-use plastics, reducing pollution and promoting eco-friendly practices. Benefits include:

- Reducing plastic pollution
- Healthy eating practices with toxin-free utensils
- Organic compost for agriculture
- Livelihood opportunities for rural and forest communities

By adopting these plant-based alternatives, we can promote a circular economy and an eco-friendly future.



INTRODUCTION

The Litter Interceptor is a solar-powered device designed to collect plastic waste from flowing canal water, addressing the critical issue of plastic pollution in water bodies. This innovation aims to reduce plastic waste in canals, prevent pollution, and promote environmental protection.

AIM

The aim of the Litter Interceptor is to design and develop a sustainable and efficient solution to collect plastic waste from water bodies, promoting a cleaner and healthier environment.

OBJECTIVE

1. **To collect plastic waste:** Collect plastic debris from the water surface, reducing plastic pollution in canals, lakes, and ponds.
2. **To prevent pollution:** Prevent plastic waste from clogging farmland, protecting livestock and aquatic animals from plastic ingestion.
3. **To promote awareness and innovation:** Promote awareness about plastic pollution and encourage innovation at the grassroots level.

Biswajit Jena
Class-X
Govt. High School, Balikuda
Guide Teacher: Jyotiranjan Sahoo

WORKING PRINCIPLE

The Litter Interceptor works on a conveyor belt mechanism powered by renewable energy, collecting plastic debris from the water surface, separating it from water, and storing it in a collector bin. The process involves:

- **Collection:** Plastic waste is collected from the water surface by a perforated conveyor belt.
- **Separation:** Water passes through the perforations, retaining only solid plastic waste on the belt.
- **Storage:** The waste is carried up the belt and deposited into a collector bin.

IMPACT AND APPLICATIONS

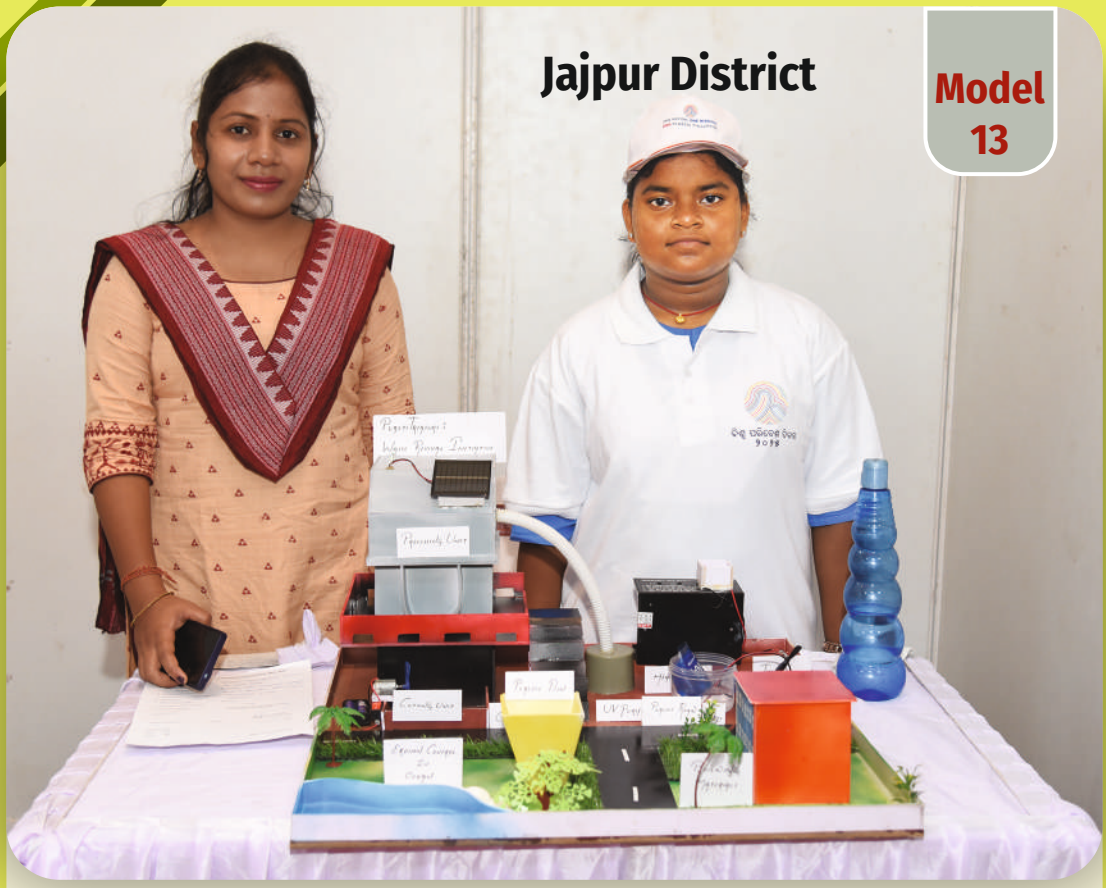
- The Litter Interceptor can have a significant impact on:
- Improving water quality in canals, lakes, and ponds.
- Preventing farmland pollution due to plastic clogging.
- Protecting livestock and aquatic animals from plastic ingestion.
- Promoting awareness and innovation at the grassroots level.

RESULT

1. **Effective plastic collection:** The device has been able to collect significant amounts of plastic waste from the water surface.
2. **Improved water quality:** The device has helped improve water quality in canals and water bodies.
3. **Increased awareness:** The project has raised awareness about plastic pollution and promoted environmental protection.

CONCLUSION

The Litter Interceptor is a smart, sustainable, and practical solution to local plastic pollution, offering a model that can be replicated across rural and urban water bodies. It showcases student-led innovation in environmental protection and promotes a cleaner, healthier environment.



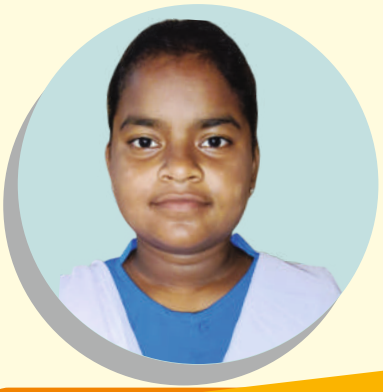
Plastic Treasure: Waste Revival Initiative

AIM

To develop and demonstrate a sustainable model for collecting, processing, and recycling plastic waste into useful materials and products, supporting the global "Beat Plastic Pollution" campaign.

OBJECTIVES

- Reduce plastic waste through proper segregation and processing
- Purify and repurpose plastic into energy and construction materials
- Use recycled plastic in infrastructure like roads, buildings, and coastal protection
- Promote awareness about plastic waste management and its environmental impacts



Pragati Priyadarshini Bhutia
Class-VIII
Binapani Govt. Bidyapitha, Nilamanideipur
Guide Teacher: Kalpana Sahoo

METHODOLOGY

1. Collection & Sorting: Plastic waste is collected and sorted by type for proper processing.
2. Cutting Unit: Plastic is shredded using a mini cutting machine.
3. Purification/Disinfection: UV light is used to kill bacteria and harmful microbes.
4. Heat Treatment & Energy Generation: Treated plastic is heated to harvest and store energy.
5. Final Product Conversion: Recycled plastic is used to make plastic roads, bricks, sea erosion barriers, and furniture.

BENEFITS & IMPACT

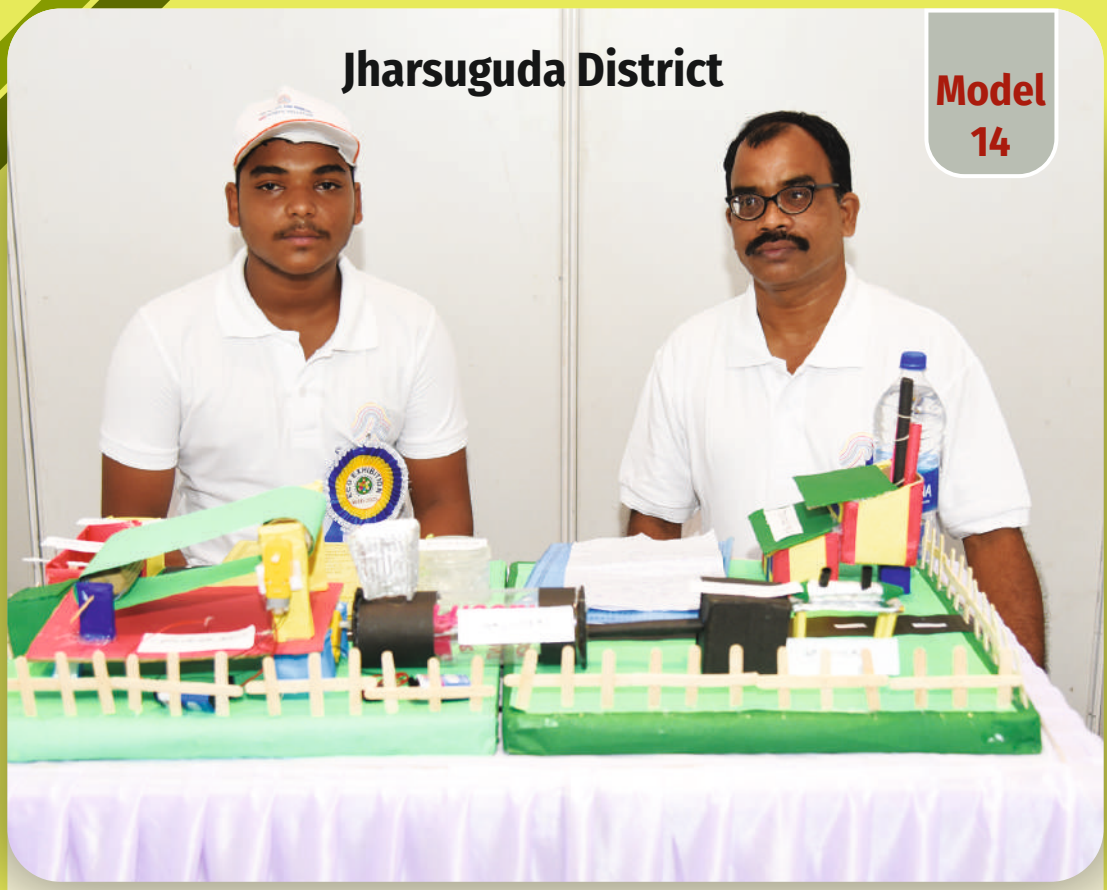
The "Plastic Treasure" project offers numerous benefits, including environmental safety through reduced pollution, sustainable resource use by turning waste into value, energy recovery, infrastructure improvement through durable roads, ecosystem protection, economic potential through low-cost materials, and public awareness about responsible plastic use.

CONCLUSION

The "Plastic Treasure" project demonstrates how an integrated waste management system can tackle the plastic crisis, transforming plastic waste into an opportunity for sustainable development and environmental conservation.

Jharsuguda District

Model 14



Making Fiber from Plastic Bottles

INTRODUCTION

The project "Making Fiber from Plastic Bottles" aims to recycle PET (Polyethylene Terephthalate) bottles into fiber, reducing plastic waste and promoting sustainability. This innovative approach transforms discarded plastic bottles into valuable products, such as clothing, bags, carpets, and more.

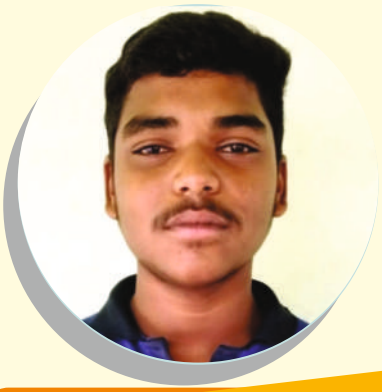
AIM

The aim of this project is to develop a sustainable and environment friendly method for recycling PET bottles into fiber, reducing plastic waste and promoting a circular economy.

OBJECTIVE

The objectives of this project are:

1. **Utilize PET properties:** Leverage the strength, flexibility, and recyclability of PET to create a valuable product.
2. **Recycle plastic into fabric:** Transform plastic waste into a usable fabric, reducing the environmental impact of plastic pollution.
3. **Promote sustainability:** Conserve resources, reduce waste, and promote creativity and functionality in developing sustainable products.



Bibeka Pujhari
Class-X
Manoj Padhee High School, Sarandamal
Guide Teacher: Sibv Shankar Meher

METHODOLOGY :

The methodology involves the following steps:

1. **Collection and sorting:** PET bottles are collected and sorted based on their type and condition.
2. **Cleaning and shredding:** The bottles are cleaned and shredded into small flakes to prepare them for processing.
3. **Melting and extrusion:** The flakes are melted and extruded into long filaments, which will be used to create the yarn.
4. **Spinning into yarn:** The filaments are spun into yarn, which can be used for textile production.
5. Textile production: The yarn is woven or knitted into fabric, which can be used to make a variety of products.
6. **Eco-friendly dyeing:** The fabric is colored using eco-friendly dyes, ensuring a sustainable and environmentally friendly final product.

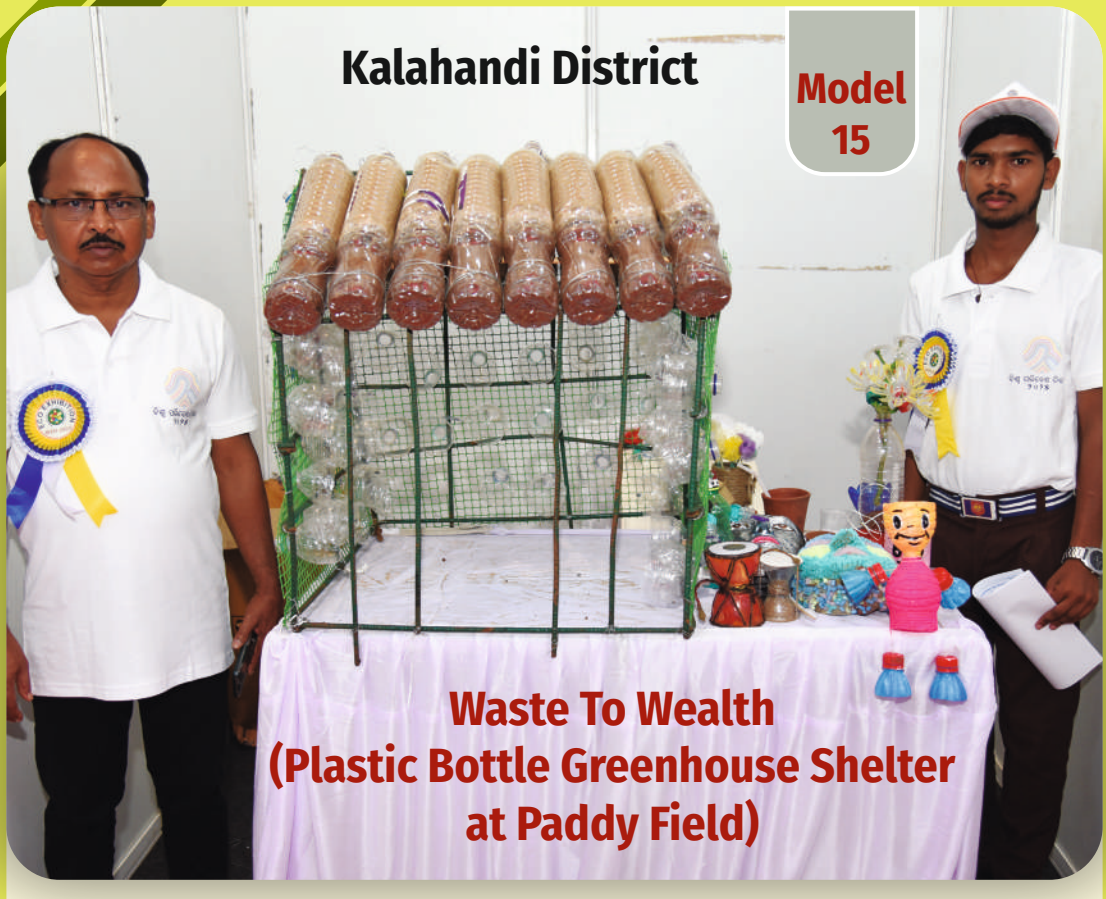
RESULT

The project has successfully demonstrated the feasibility of recycling PET bottles into fiber, resulting in:

1. **Sustainable fabric:** A sustainable and environmentally friendly fabric, suitable for various applications.
2. **Reduced plastic waste:** A reduction in plastic waste, contributing to a cleaner environment.
3. **Promoting circular economy:** A practical solution promoting a circular economy, where waste is transformed into valuable products.

CONCLUSION

This project showcases a practical solution to plastic waste, promoting a circular economy and a sustainable future by turning used plastic bottles into valuable products. By adopting such innovative approaches, we can reduce plastic pollution, conserve resources, and promote sustainability, contributing to a healthier environment for future generations.



AIM

The aim of this project is to create a low-cost, eco-friendly, and durable shelter for farmers using plastic waste, providing protection from heat and contributing to environmental sustainability.

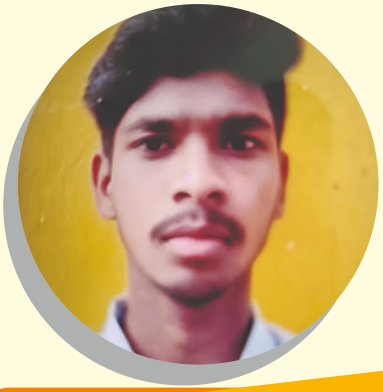
OBJECTIVE

The objectives of this project are:

1. **To utilize plastic waste:** Convert plastic waste into valuable construction material, reducing pollution and promoting sustainability.
2. **To provide protection:** Protect farmers from heatwaves and sunstroke, increasing agricultural efficiency and worker safety.
3. **To promote eco-friendly architecture:** Encourage zero carbon footprint architecture and sustainable innovation in rural areas.

WORKING PRINCIPLE

- **Roof:** Soil-filled plastic bottles provide insulation, absorb heat, and ensure structural stability.
- **Walls:** Built using a mesh structure filled with plastic waste, reducing pollution and reusing non-biodegradable materials.
- **Zero-Cost Air Cooling Effect:** Soil-filled bottles and ventilation gaps create a cooling effect without electricity.



Pintu Suna
Class-X
Police High School, Bhawanipatna
Guide Teacher: Rabindra Ku. Pattnaik

METHODOLOGY

- Converts

The methodology involves the following steps:

1. **Collection of plastic bottles:** Collect plastic bottles and clean them for use in construction.
2. **Preparation of roof:** Fill plastic bottles with soil, which provides insulation, absorbs heat, and ensures structural stability.
3. **Construction of walls:** Build walls using a mesh structure filled with plastic waste, reducing pollution and reusing non-biodegradable materials.
4. **Design for ventilation:** Incorporate ventilation gaps to create a zero-cost air cooling effect without electricity.

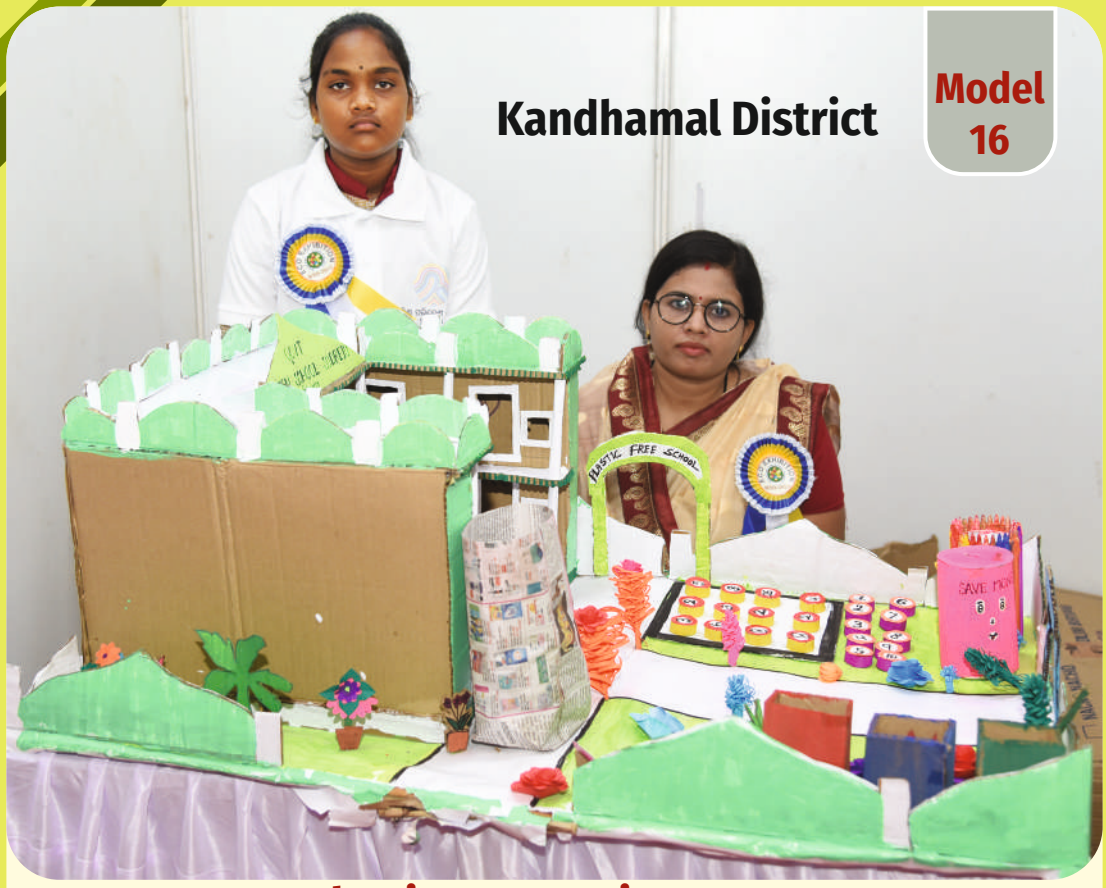
RESULT

The project has achieved the following results:

1. **Low-cost shelter:** A low-cost and durable shelter for farmers, providing protection from heat and promoting sustainability.
2. **Zero carbon footprint:** A zero carbon footprint architecture that encourages sustainable innovation and reduces environmental impact.
3. **Increased agricultural efficiency:** Increased agricultural efficiency and worker safety, contributing to rural development and environmental conservation.

CONCLUSION

This project transforms plastic pollution into a protective solution for farmers, promoting a circular economy and sustainable innovation. By utilizing plastic waste, providing protection from heat, and encouraging eco-friendly architecture, this project supports India's goals of environmental conservation and rural development. The project's success demonstrates the potential for innovative solutions to address environmental challenges and promote sustainable development.



Plastic-Free Environment

AIM

The aim of this project is to promote a plastic-free environment by reusing plastic waste innovatively, reducing pollution, and raising awareness about responsible waste disposal. The project seeks to create a significant impact on the community by reducing plastic waste, promoting sustainable practices, and educating people about the importance of environmental conservation.

METHODOLOGY

The methodology involves the following steps:

1. **Dustbin Segregation Model:** Use color-coded dustbins for segregation:
   - Green (Biodegradable)
   - Blue (Non-biodegradable)
   - Red (Hazardous)

   This model helps to ensure that waste is properly segregated and disposed of.
2. **Creative reuse of plastic waste: Use plastic waste to create:**
   - Teaching Learning Materials (TLM)
   - Paper bags
   - Home decor tools

Subhadra Nayak
Class-X
Govt. High School, Sudreju
Guide Teacher: Jasmita Kumari Guru

This showcases the potential for plastic waste to be transformed into valuable and useful products.

3. Awareness and education: Educate people about the importance of waste segregation, recycling, and reusing plastic. This involves conducting workshops, seminars, and other awareness programs to educate people about the impact of plastic pollution and the benefits of sustainable practices

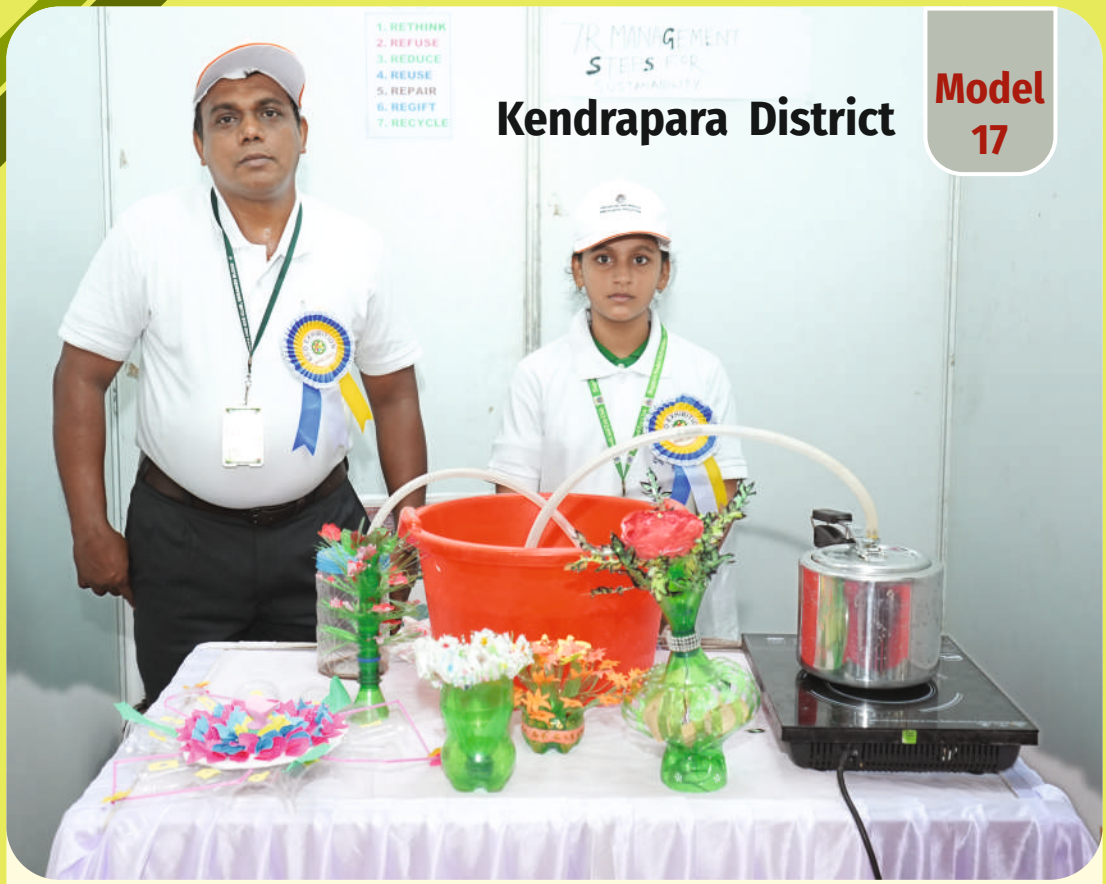
RESULT

The project has achieved the following results:

1. **Increased awareness:** People are more aware of the harmful effects of plastic and the importance of waste segregation. This increased awareness has led to a change in behavior and attitudes towards plastic use and waste disposal.
2. **Reduced plastic waste:** Plastic waste is reduced through creative reuse and recycling. This has helped to decrease the amount of plastic waste that ends up in landfills and oceans.
3. **Promoted sustainable practices:** Paper and cloth bag alternatives are promoted, reducing polythene bag use. This has helped to reduce the impact of polythene bags on the environment and promote sustainable practices

CONCLUSION

This project highlights the importance of waste segregation, recycling, and reusing plastic to reduce environmental hazards. By promoting sustainable practices and reducing plastic waste, we can create a plastic-free environment that is healthier and more sustainable for future generations. The project's success demonstrates the potential for community-led initiatives to drive positive change and promote environmental conservation. The project's impact can be scaled up and replicated in other communities, contributing to a larger movement towards a plastic-free environment.



Kendrapara District

Model 17

7R Waste Management -A Step Toward Sustainable Life

AIM

The aim of this initiative is to combat plastic pollution by implementing sustainable strategies, focusing on the 7R approach: Rethink, Refuse, Reduce, Reuse, Repair, Regift, and Recycle. This approach seeks to minimize plastic usage and waste, promoting behavioral change and creative reuse.

OBJECTIVE

The objective of this project is to address the threats posed by plastic pollution, including microplastics, nanoplastics, and e-waste, while promoting sustainable practices and reducing health risks associated with Endocrine Disrupting Chemicals (EDCs).

Deepika Devapriya Panda
Class-IX
Bagdevi Nodal Bidyapitha
Guide Teacher: Nirmal Ku. Jena

7R WORKING PRINCIPLE

1. **Rethink:** Encourage a mindset shift towards sustainability, considering the impact of daily choices on the environment.
2. **Refuse:** Avoid single-use plastics, opting for alternatives that reduce waste.
3. **Reduce:** Choose long-lasting products, minimizing the need for frequent replacements.
4. **Reuse:** Give discarded plastics a second life, finding creative ways to repurpose them.
5. **Repair:** Fix items rather than discarding them, extending their lifespan.
6. **Regift:** Repurpose and gift creatively reused plastic items, promoting a culture of sharing and sustainability.
7. **Recycle:** Promote responsible recycling practices, ensuring that waste is properly managed.

METHODOLOGY

The project involves:

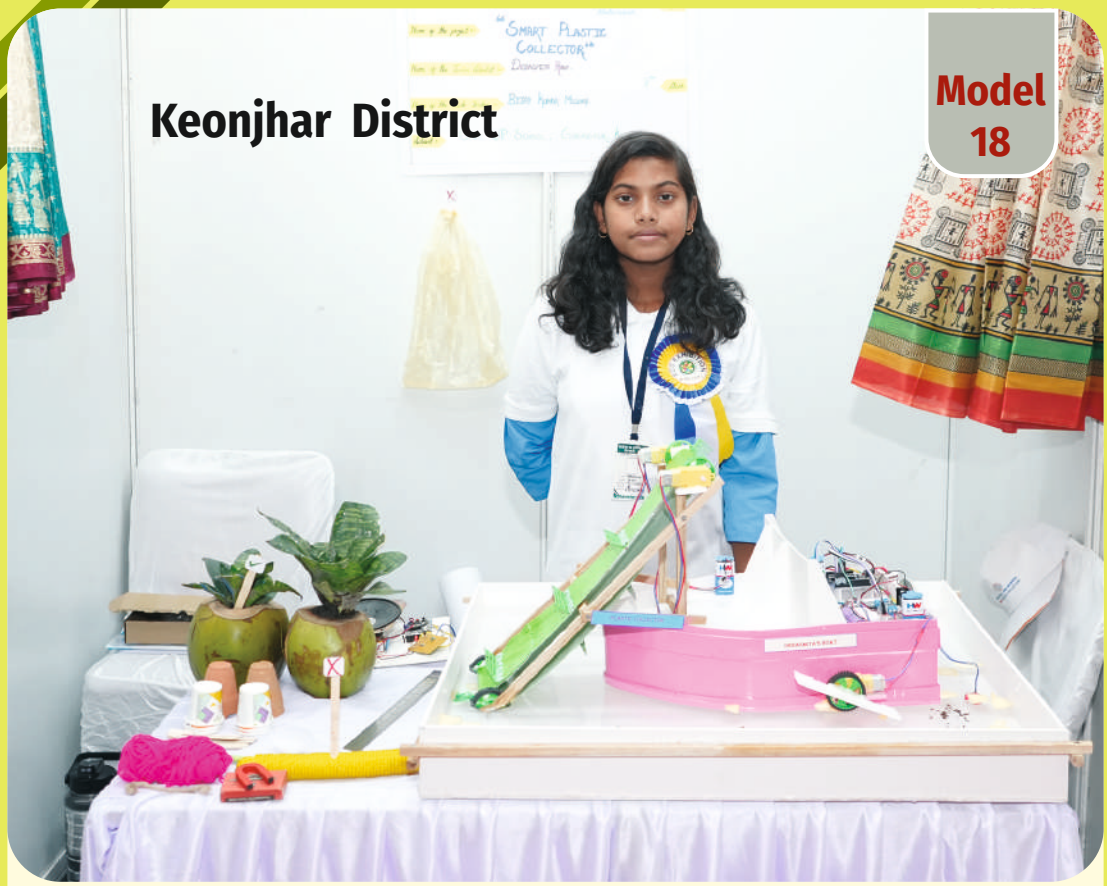
- Practical demonstrations using household plastic waste and e-waste awareness, showcasing the 7R approach in action.
- Promotion through local culture and community engagement, encouraging widespread adoption of sustainable practices.

BENEFITS

- **Reduced plastic waste:** Minimizing plastic usage and waste reduces the amount of plastic that ends up in landfills and oceans.
- **Conservation of natural resources:** Reducing, reusing, and recycling plastic conserve natural resources and reduce the need for raw materials.
- **Decreased greenhouse gas emissions:** we can decrease greenhouse gas emissions and mitigate climate change.
- **Protection of wildlife:** help to protect wildlife from the harmful effects of plastic pollution.
- **Improved public health:** By reducing exposure to Endocrine Disrupting Chemicals (EDCs).

CONCLUSION

Implementing the 7R strategy at the grassroots level can create a sustainable and pollution-free future, emphasizing awareness, innovation, and action.



Smart Plastic Collector

INTRODUCTION

A multi-functional solution to collect, segregate, and raise awareness about plastic waste, integrating modern electronics, renewable energy, and eco-friendly practices. Create a smart plastic collection system using technology, robotics, and public awareness to beat plastic pollution in water bodies and on land.

OBJECTIVES

1. Design a smart boat system to collect plastic waste from water bodies.
2. Separate and remove microplastics using magnetic nanoparticles.
3. Use an oil skimmer system to clean oil and grease from water surfaces.
4. Extract plastic waste from soil and sand using vacuum and water-based separation.
5. Promote sustainable alternatives to plastic through awareness.

Debasmita Rout
Class-VIII
Govt. UP School, Gobindapur
Guide Teacher: Bijay Kumar Mishra

METHODOLOGY

1. Smart Garbage Collecting Ship: Arduino microcontroller-based boat controlled by Android phone via Bluetooth, collecting plastic waste from water bodies.
2. Magnetic Microplastic Collector: Magnetic nanoparticles bind with microplastics, allowing easy separation using a magnet.
3. Skimmer System: Removes unwanted substances like oil and grease from liquid surfaces using a disk or belt.
4. Plastic Separation from Soil and Sand: Vacuum collection and water-based density separation to isolate plastic.
5. Awareness about Plastic Alternatives: Promotes eco-friendly alternatives to plastic, such as bioplastics, reusable packaging, and natural fibers.

ADVANTAGES

The Smart Plastic Collector offers several advantages:

- **Effective and portable:** The system is designed to be efficient and adaptable, making it suitable for various environments.
- **Low cost:** The system provides a cost-effective solution for collecting both macro and microplastics.
- **Promotes green energy and smart technology:** The system integrates renewable energy and modern electronics, promoting sustainable practices.
- **Enhances environmental awareness:** The system raises awareness about plastic pollution and promotes eco-friendly alternatives.

CONCLUSION

The Smart Plastic Collector is a visionary solution to combat plastic pollution, contributing to a cleaner and greener Earth through smart technology, traditional wisdom, and environmental consciousness. By providing a comprehensive approach to tackling plastic pollution, this system has the potential to make a significant impact on reducing plastic waste and promoting sustainable practices.

Model 19

Khordha District

Transforming Waste into Useful Products

AIM

Reduce plastic waste by converting used plastics into useful items like sketchpen caps through a simple, eco-friendly recycling process.

OBJECTIVES

1. Demonstrate reuse of plastic waste through basic recycling techniques.
2. Raise awareness on transforming single-use plastics into functional stationery items.
3. Showcase a low-cost method for recycling suitable for rural and school-level initiatives.

METHODOLOGY & WORKING PROCESS

Collection of Plastic Waste:

Gathered waste plastics like bottle caps, wrappers, and discarded containers from local surroundings.

Swatipragya Muduli
Class-X
Govt. High School, Paikatigiria
Guide Teacher: Niranjan Sahoo

Cleaning and Drying:

The plastics were thoroughly washed to remove dirt and contaminants, and dried completely to prepare for processing.

Shredding Process:

The dried plastic was shredded into small pieces using a manual or basic shredding tool.

Melting and Molding:

Shredded plastic pieces were heated to melt (under safe supervision).The molten plastic was poured into a prepared cap mold for sketchpens.

Cooling and Finishing:

The mold was allowed to cool and solidify.

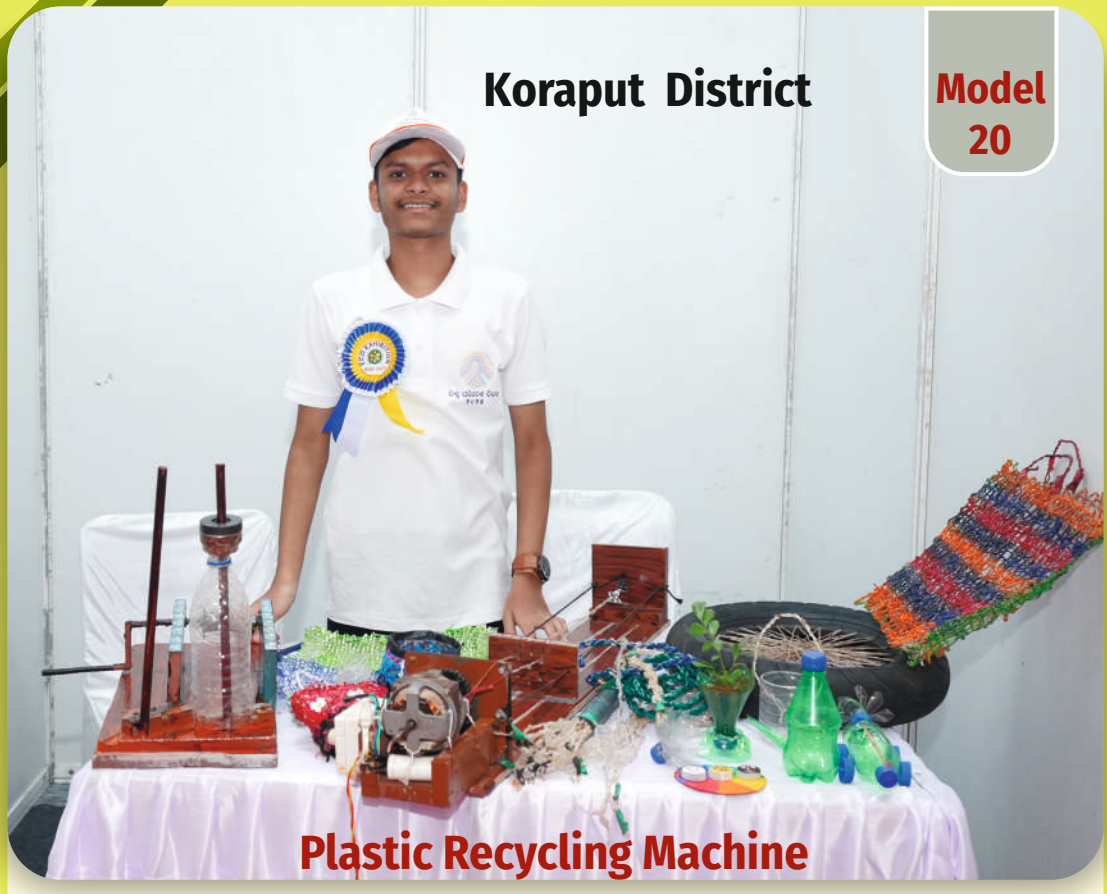
After setting, the cap was finished and refined for proper fitting on sketch pens.

IMPACT:

- Reduces plastic waste in local surroundings
- Creates functional stationery items from single-use plastics
- Provides a low-cost recycling method suitable for rural and school-level initiatives
- Raises awareness on the importance of plastic recycling and waste management

CONCLUSION

By transforming waste plastic into useful products like sketchpen caps, this project reduces environmental pollution, promotes sustainable resource use, and encourages creative thinking. The simple and replicable technique showcases the potential for students to contribute to a plastic-free future, proving that "Plastic is not always trash - it can be treasure."



Koraput District

Model 20

Plastic Recycling Machine

INTRODUCTION

The Plastic Recycling Machine is a low-cost, practical solution designed to manage plastic waste in rural and semi-urban communities. The machine converts waste plastic bottles into reusable plastic strands and ropes, promoting sustainability and empowering communities.

OBJECTIVES

The objectives of this project are:

1. Convert waste plastic bottles into reusable plastic strands and ropes.
2. Encourage plastic reuse through creativity and functionality.
3. Empower students and communities with sustainable recycling techniques.
4. Promote skill-based entrepreneurship through eco-friendly products.

MODEL COMPONENTS

The Plastic Recycling Machine consists of two primary components:

1. **Manual Plastic Strand Cutter:** A hand-cranked device that slices PET bottles into uniform strands.
2. **Plastic Rope-Making Machine:** Powered by an AC motor, it weaves plastic strands into durable ropes.

Satyaraj Mahapatra
Class-X
Govt. High School , Kotpad
Guide Teacher: Brahma Datta Mishra

METHODOLOGY

The methodology involves the following steps:

1. **Collection of PET bottles:** Gathering waste PET bottles from local communities.
2. **Cleaning and preparation:** Cleaning and preparing the PET bottles for processing.
3. **Strand cutting:** Using the manual plastic strand cutter to slice PET bottles into uniform strands.
4. **Rope making:** Feeding the plastic strands into the plastic rope-making machine to create durable ropes.
5. **Product creation:** Using the recycled plastic ropes to create various products, such as reusable carry bags, fruit baskets, and eco-friendly pen holders.

APPLICATIONS AND BENEFITS

The recycled plastic ropes can be used to create a variety of products, including:

- Reusable carry bags
- Fruit baskets
- Eco-friendly pen holders
- Woven mats
- Decorative craft items

The benefits of this project include:

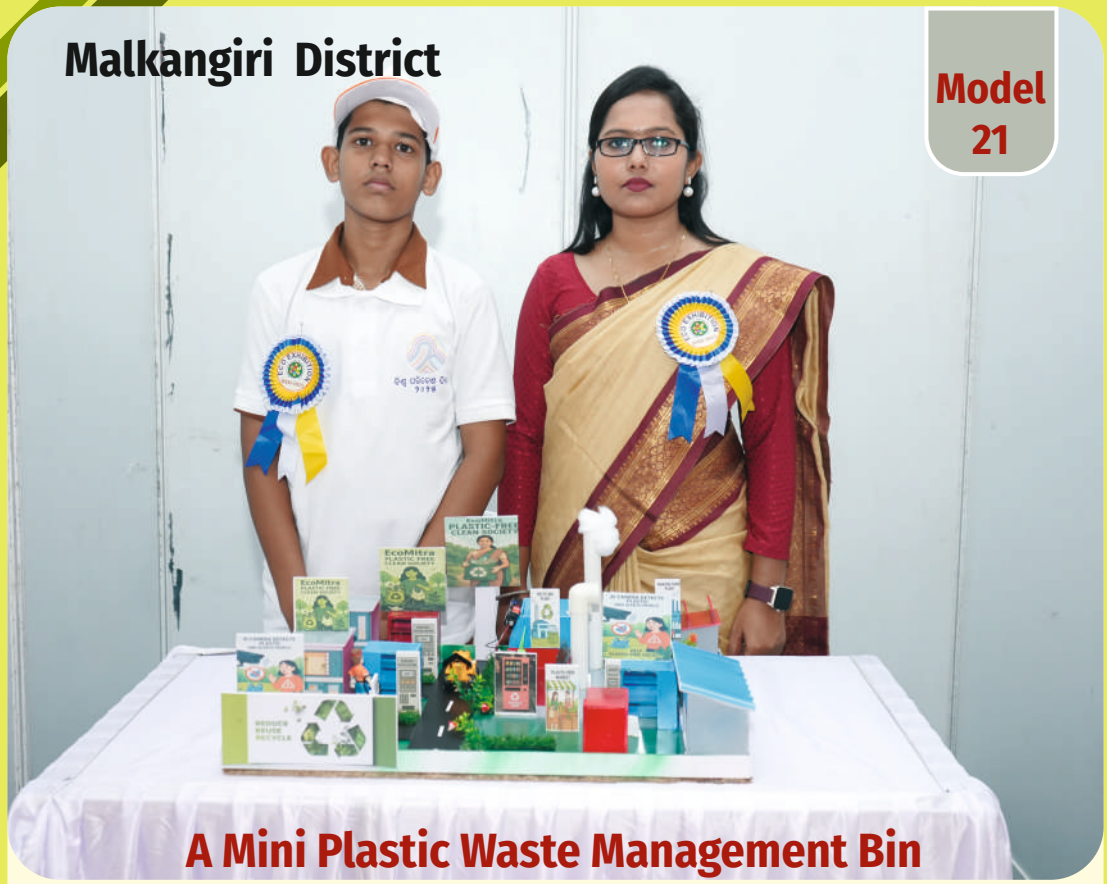
- Eco-friendly: Reduces plastic waste and promotes sustainability.
- Educational: Empowers students and communities with sustainable recycling techniques.
- Entrepreneurial potential: Offers opportunities for skill-based entrepreneurship through eco-friendly products.
- Low-cost and scalable: Accessible and adaptable for different communities and applications.

CONCLUSION

The Plastic Recycling Machine is a practical solution for reducing plastic pollution, promoting sustainability, and empowering communities. By turning waste into utility, it bridges the gap between environmental concern and practical action. This project has the potential to make a significant impact on managing plastic waste and promoting eco-friendly practices in rural and semi-urban communities.

Malkangiri District

Model 21



A Mini Plastic Waste Management Bin

AIM

The "A Mini Plastic Waste Management Bin" project aims to raise awareness and promote environmental responsibility by encouraging sustainable waste management practices to reduce plastic pollution.

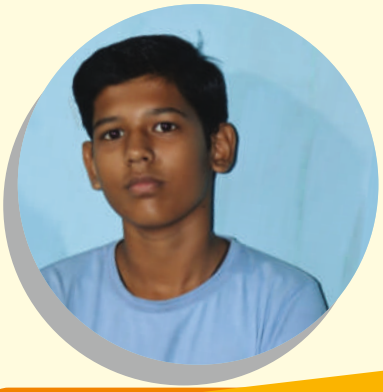
OBJECTIVE

1. Encourage sustainable waste management practices through community engagement.
2. Integrate technology to promote eco-friendly habits and reduce plastic waste.
3. Educate individuals on the importance of proper waste disposal and management.

WORKING PRINCIPLE

The project consists of two core components:

1. Plastic Waste Vending Machine: Encourages proper disposal of plastic bottles and packaging materials, promoting responsible waste management practices.
2. AI-Enabled Camera Monitoring System: Identifies plastic waste being misused or improperly discarded, supporting



Yashraj Gantayat
Class-X
Govt. High School, Malkangiri
Guide Teacher: Smrutirekha Ojha

enforcement of anti-pollution norms and promoting accountability.

RESULTS

The project yields significant results, including:

- **Promotion of eco-friendly disposal and reuse of plastic:** Encourages individuals to adopt sustainable waste management practices, reducing plastic waste and promoting reuse.
- **Effective integration of technology:** AI cameras monitor and track plastic waste, providing valuable insights and supporting enforcement of anti-pollution norms.
- **Encouragement of responsible behavior:** Interactive solutions promote responsible behavior and encourage individuals to adopt eco-friendly habits.

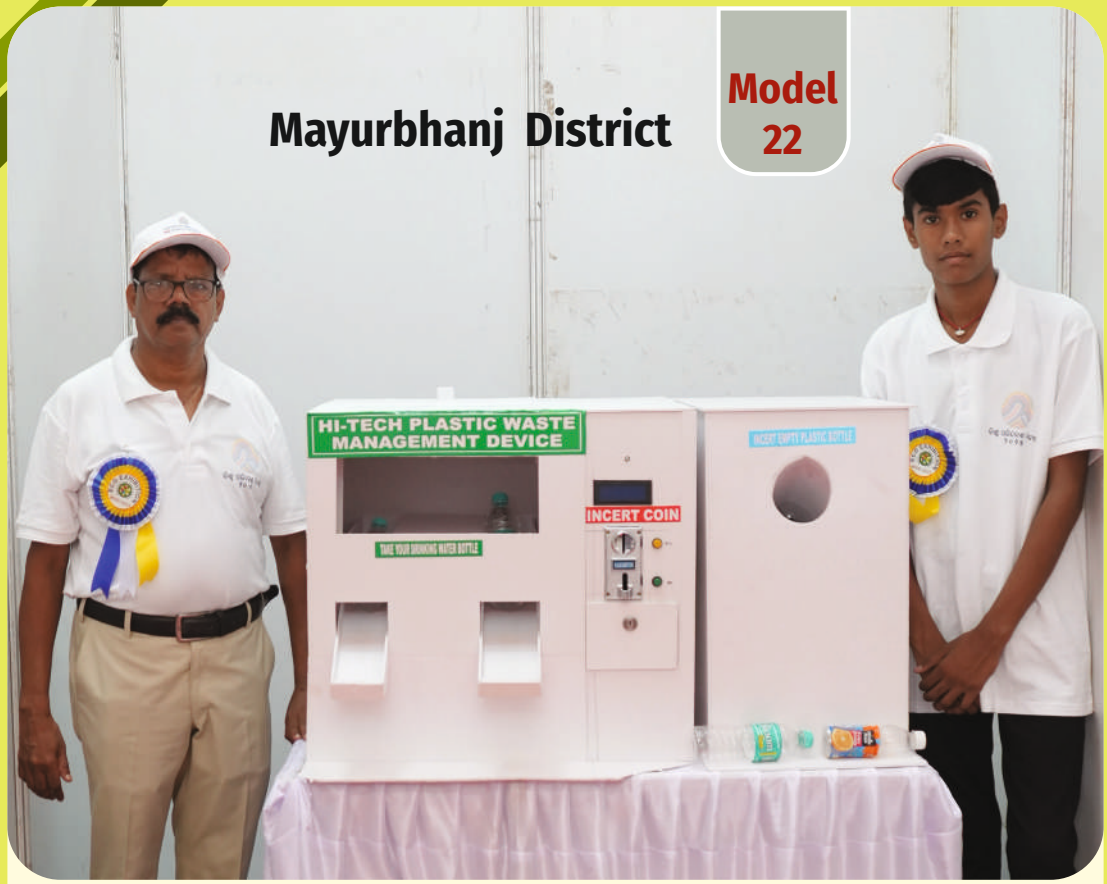
SUSTAINABILITY IMPACT

The project has a significant sustainability impact, including:

- **Reduces environmental plastic load:** By promoting proper disposal and reuse of plastic, the project reduces the amount of plastic waste in the environment.
- **Encourages smart cities and clean communities:** The project promotes sustainable waste management practices, contributing to cleaner and more sustainable communities.
- **Educates the public:** The project educates the public on the need for a circular plastic economy, promoting awareness and understanding of sustainable waste management practices.

CONCLUSION

The "A Mini Plastic Waste Management Bin" project effectively promotes sustainable waste management practices, reduces plastic pollution, and encourages responsible behavior through innovative technology integration. By inspiring individuals and communities to adopt eco-friendly habits, this project contributes to a cleaner environment and a more sustainable future.



Hi-tech Plastic Waste Management Device

INTRODUCTION

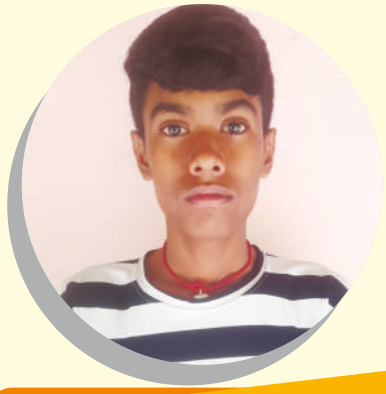
The Hi-Tech Plastic Waste Management Device is an innovative solution designed to reduce and reuse plastic waste through a portable, mechanical, and reward-based system. This device encourages plastic recycling by providing incentives to users, promoting sustainable practices, and contributing to a cleaner environment.

AIM OF THE PROJECT

The aim of this project is to reduce and reuse plastic waste through a portable, mechanical, and reward-based device that encourages plastic recycling.

OBJECTIVES

1. Promote plastic recycling through incentives and rewards.
2. Reduce plastic waste in the environment.
3. Foster a culture of sustainability and environmental responsibility.



Shubhankar Behera
Class-X
Raghunath High School, Raikama
Guide Teacher: Ajit Kumar Jena

METHODOLOGY

The methodology involves the following steps:

1. **User interaction:** The user inserts an empty plastic bottle into the designated chamber.
2. **UV sensor detection:** The UV sensor detects the plastic bottle and sends a signal to the microprocessor.
3. **Prompt for coin insertion:** A prompt appears on the monitor, asking the user to insert a coin.
4. **Coin insertion and reward:** Upon coin insertion, the system activates the DC motor, which releases a sealed fresh water bottle.
5. **Reward mechanism:** The system ensures that the user spends only 50% of the usual cost to receive a water bottle, while simultaneously contributing to plastic waste reduction.

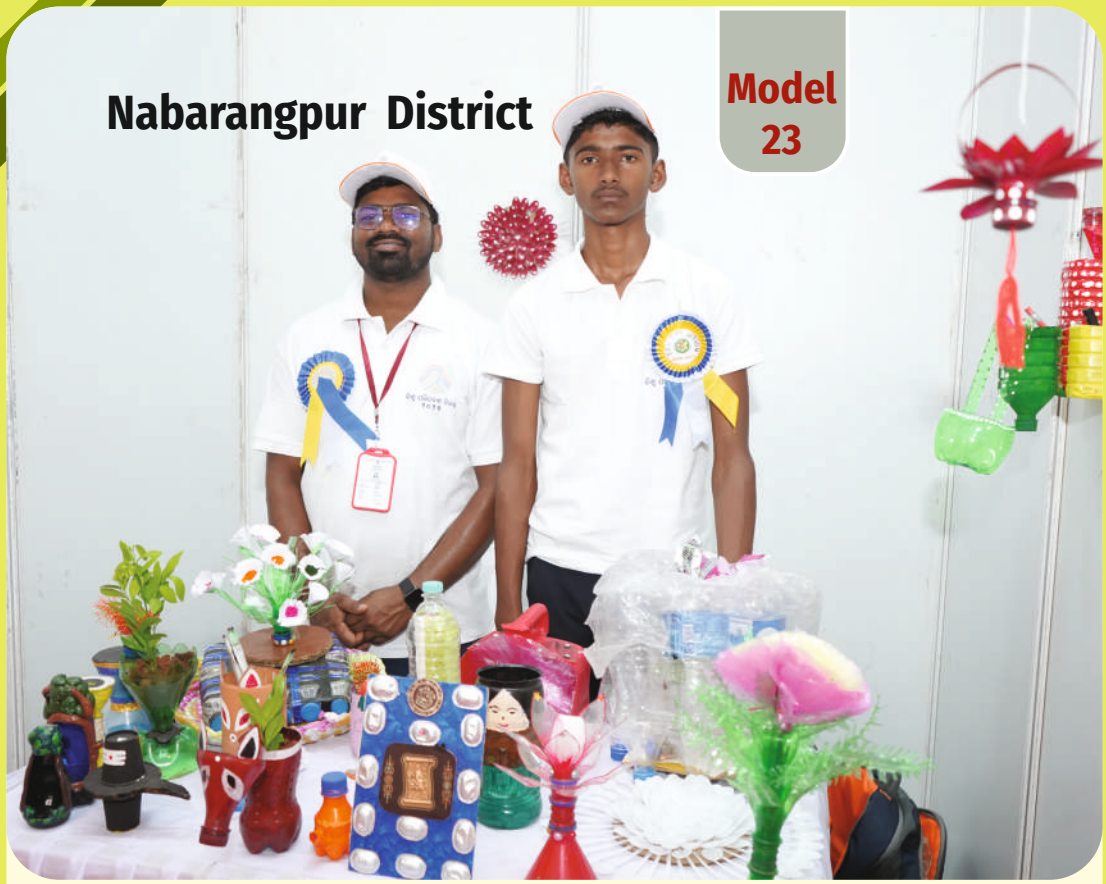
WORKING PRINCIPLE

The device operates on the transformation of electrical energy into mechanical energy, integrating automation and sensors to enable waste management with minimal manual effort. The device consists of:

1. **UV sensor:** Detects the plastic bottle and sends a signal to the microprocessor.
2. **Microprocessor:** Processes the signal and controls the device's operations.
3. **DC motor:** Activates the release of the sealed fresh water bottle.
4. **Monitor:** Displays prompts and information to the user.

CONCLUSION

The Hi-Tech Plastic Waste Management Device offers an innovative solution to plastic pollution by promoting recycling, reducing waste, and encouraging sustainable practices. By transforming waste into a valuable resource, this project contributes to a cleaner environment and inspires a "Waste to Wealth" approach, ultimately fostering a more eco-friendly future. This device has the potential to make a significant impact on reducing plastic waste and promoting sustainability in communities.



Useful Utilization of Single Use Plastics

INTRODUCTION

The "Useful Utilization of Single Use Plastics" project aims to address the critical global challenge of plastic pollution by repurposing household single-use plastic waste into useful daily items. This project creates awareness about plastic waste management and promotes eco-friendly practices.

OBJECTIVES

The objective of this project is to repurpose household single-use plastic waste into useful daily items and create awareness about plastic waste management.

METHODOLOGY

The methodology involves the following steps:

1. **Collection and sorting of SUP waste:** Collecting and sorting single-use plastic waste from households and communities.
2. **Crafting and assembling:** Transforming the collected plastic waste into creative and useful items through crafting and assembling.

Yuvraj Patra
Class-X
Govt. Gopabandhu High School
Guide Teacher: Lokanath Giri

WORKING PRINCIPLE

1. **Collecting and sorting plastic waste:** Gathering single-use plastic waste from households, communities, and public spaces, and sorting it based on type, shape, and size.
2. **Cleaning and preparing the plastic waste for crafting:** Cleaning and processing the collected plastic waste to make it suitable for crafting and reuse.
3. **Designing and creating useful and decorative items:** Using creativity and innovation to design and create useful and decorative items from the prepared plastic waste.
4. **Assembling and finishing the final products:** Assembling the crafted items and adding finishing touches to create functional and aesthetically pleasing products.

RESULTS

The project transforms single-use plastics into a variety of creative items, including:

Broom/Dust Cleaner, Pen stands, Decorative vases, Lamps, Carpets from plastic wrappers , Soap Case, Dustbin, Utensil Holders, Hanging Planters, Wall Art.

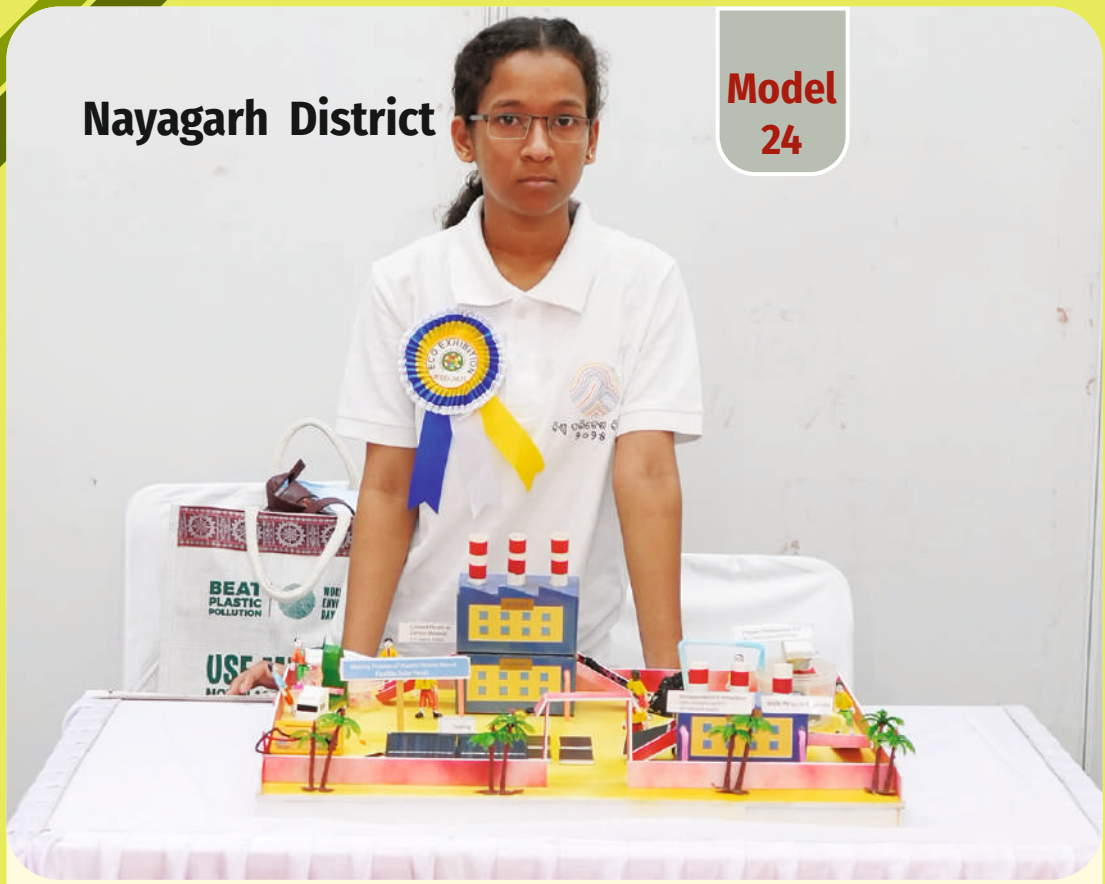
These innovative creations not only reduce plastic waste but also promote recycling, cost-effective solutions, and eco-conscious behavior while spreading awareness about the dangers of single-use plastics.

CONCLUSION

This project transforms waste into a resource, contributing to a cleaner, greener future by promoting creative reuse of plastic waste and encouraging communities to adopt eco-friendly practices. By repurposing single-use plastics, we can reduce plastic waste, promote sustainability, and inspire others to take action against plastic pollution. This project demonstrates the potential for creative and innovative solutions to address the global plastic pollution challenge.

Nayagarh District

Model 24



Solar Panel Using Plastic Waste

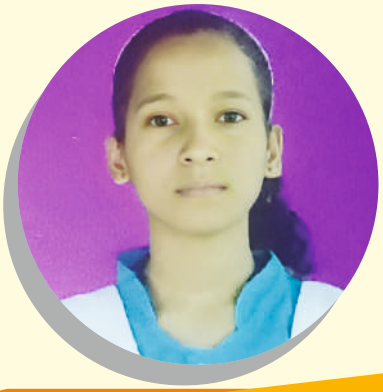
INTRODUCTION

In the face of increasing plastic pollution and rising energy demand, this project proposes a sustainable and innovative solution: transforming non-biodegradable plastic waste into functional solar panels. This dual-purpose approach contributes to both waste reduction and clean energy production, embodying the concept of a circular economy.

AIM

To design and develop a sustainable solar panel using recycled plastic waste, leveraging pyrolysis technology to create carbon-rich materials, and producing a flexible, lightweight, and eco-friendly solar panel at a low cost.

The "Solar Panel Using Plastic Waste" project proposes a innovative solution to address two global challenges: plastic pollution and energy scarcity. By transforming non-biodegradable plastic waste into functional solar panels, this project contributes to both waste reduction and clean energy production.



Rashmita Sahoo
Class-X
Govt. Higher Secondary School, Mahipur
Guide Teacher: Rajeswari Behera

WORKING PRINCIPLE

The methodology involves a multi-step process:

1. **Collecting and cleaning plastic waste:** Gathering non-biodegradable plastic waste and cleaning it for processing.
2. **Pyrolysis process:** Breaking down the plastic waste into carbon-rich particles through pyrolysis.
3. **Synthesizing photovoltaic ink:** Using the carbon-rich particles to synthesize photovoltaic ink.
4. **Layer-by-layer assembly:** Applying the photovoltaic ink in a layer-by-layer assembly of the solar panel, including coating the active photovoltaic layer on PET plastic and applying a transparent conductive layer.
5. **Encapsulation and sealing:** Encapsulating the panel for weather resistance and sealing it for durability.
6. **Testing and evaluation:** Testing the solar panel under real sunlight to evaluate its efficiency.

WORKING PRINCIPLE

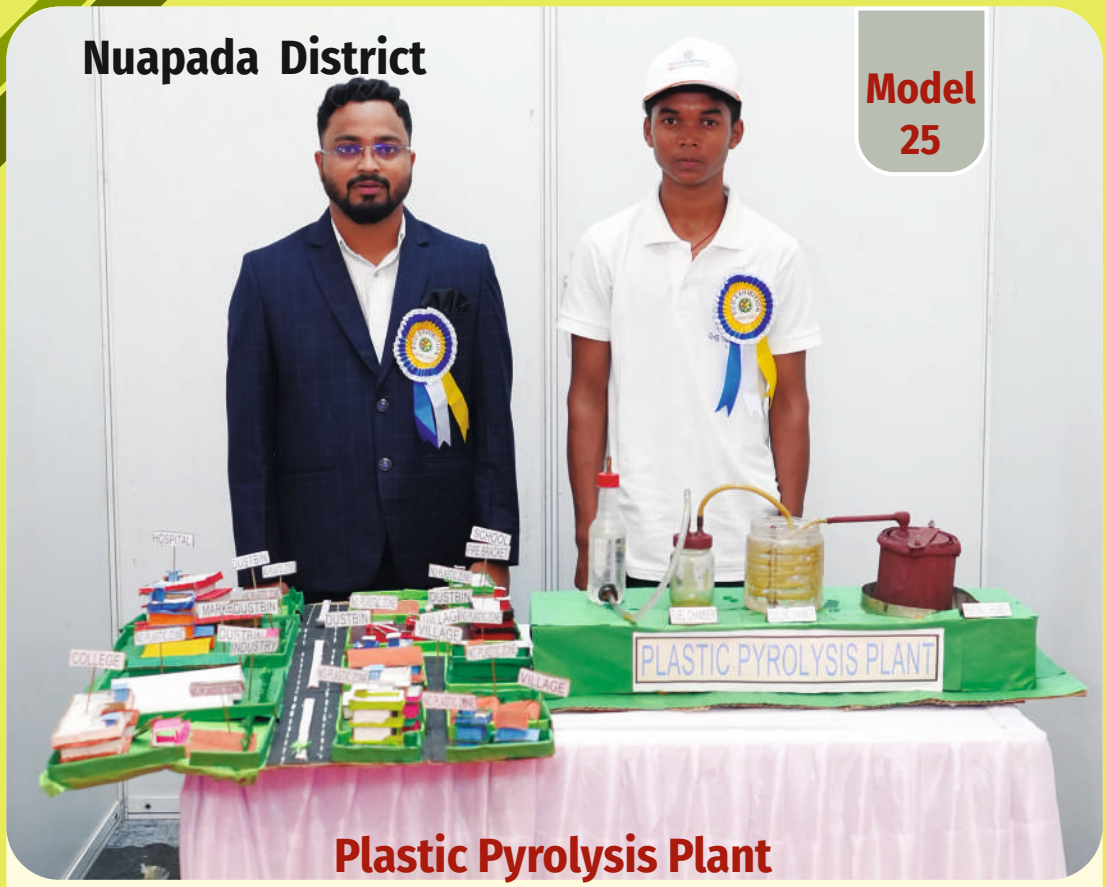
The working principle of this project is based on the conversion of plastic waste into a valuable resource, using pyrolysis technology to create carbon-rich materials that can be used to synthesize photovoltaic ink. The solar panel works by converting sunlight into electrical energy, using the photovoltaic ink to generate a current.

RESULT

1. Reduces plastic pollution and promotes sustainability.
2. Lower production cost than traditional solar panels.
3. Flexible and lightweight design for versatile applications.
4. Generates clean energy from sunlight.

CONCLUSION

This project provides a visionary approach to solving two global problems: plastic waste and energy scarcity. By transforming plastic waste into functional solar panels, this project contributes to a cleaner, greener future and emphasizes the power of innovation in building a more sustainable world.



Plastic Pyrolysis Plant

INTRODUCTION

Plastic pollution is a severe global issue, with plastic taking hundreds of years to decompose and causing harm to marine life and ecosystems. The Plastic Pyrolysis Plant offers an innovative solution by converting plastic waste into usable fuel, gas, and electricity.

The Plastic Pyrolysis Plant is an innovative solution for managing plastic waste, converting non-biodegradable plastic into usable fuel, gas, and electricity. This project aims to reduce plastic pollution and generate clean energy, promoting a sustainable and eco-friendly waste management solution.

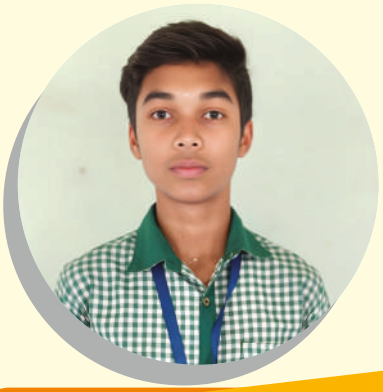
AIM

The aim of this project is to convert plastic waste into usable fuel, gas, and electricity through a pyrolysis process, reducing plastic pollution and generating clean energy.

METHODOLOGY

The methodology involves the following steps:

1. **Plastic Collection & Preparation:** Collecting, sorting, and shredding plastic waste into small pieces.



Tikelal Majhi
Class-X
Govt. High School, Hatibandha
Guide Teacher: Rupesh Ku. Meher

2. **Pyrolysis:** Heating the shredded plastic in a sealed, oxygen-free chamber to break down the plastic into smaller molecules.
3. **Vaporization & Cooling:** Condensing the vapors into liquid fuel and gas.
4. **Gas Utilization:** Filtering and using non-condensable gases to generate electricity or for heating purposes.
5. **Fuel Filtration:** Removing impurities from the collected fuel to produce high-quality fuel.

WORKING PRINCIPLE

The working principle of the Plastic Pyrolysis Plant is based on the thermal decomposition of plastic waste in the absence of oxygen. The process involves:

1. **Pyrolysis reaction:** Breaking down plastic molecules into smaller hydrocarbons.
2. **Fuel production:** Collecting and condensing the hydrocarbons into liquid fuel.
3. **Gas production:** Collecting and utilizing non-condensable gases for electricity generation or heating.

BENEFITS :

The Plastic Pyrolysis Plant achieves several benefits, including:

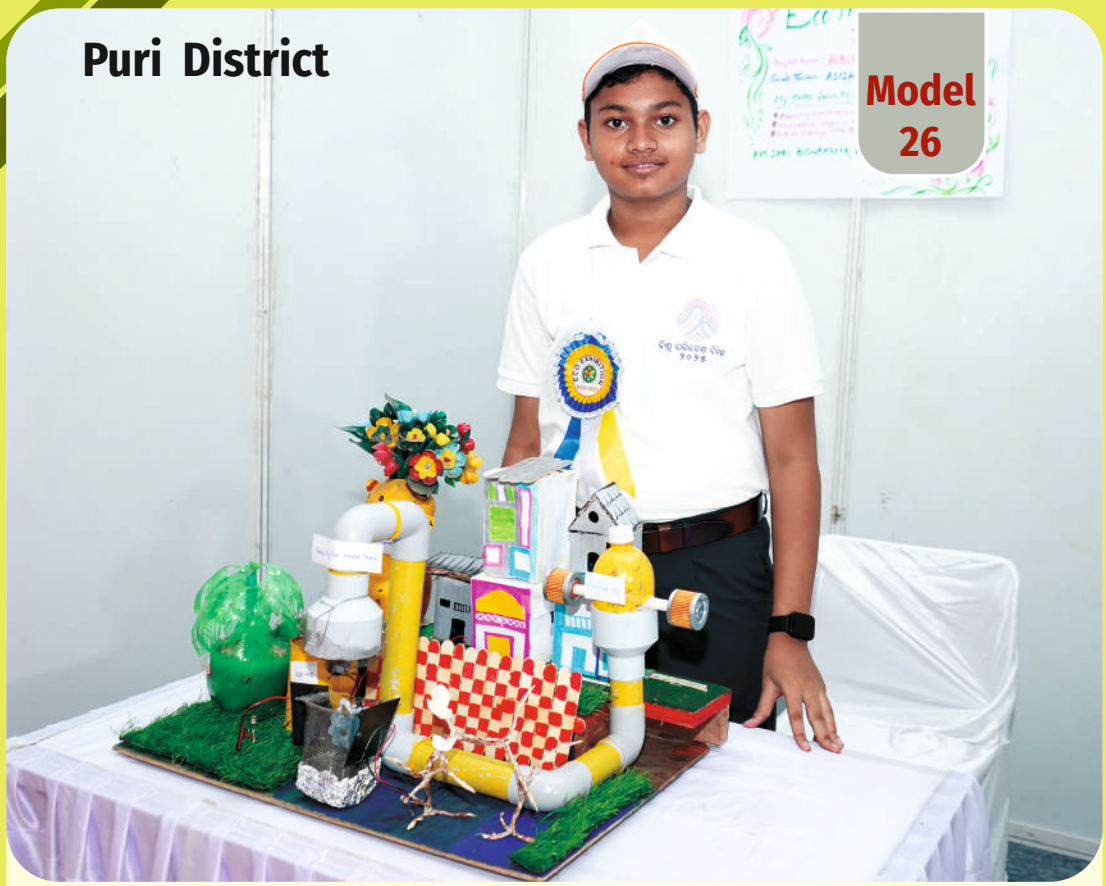
1. **Conversion of non-biodegradable waste into valuable resources**: Reducing plastic waste and generating valuable products.
2. **Reduction of plastic pollution and health hazards:** Minimizing the impact of plastic waste on the environment and human health.
3. **Generation of clean energy:** Producing fuel, gas, and electricity from plastic waste, reducing dependence on fossil fuels.
4. **Maintenance of a clean, disease-free environment:** Reducing plastic waste and promoting a healthy environment.

CONCLUSION

The Plastic Pyrolysis Plant is a sustainable solution for managing plastic waste, producing fuel, gas, and electricity while contributing to a cleaner environment. This project demonstrates the potential for innovative technologies to address plastic pollution and generate clean energy, promoting a more sustainable future.

Puri District

Model 26



Eco-Friendly Plastic Recycling City

INTRODUCTION

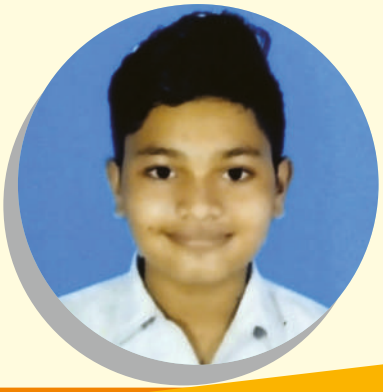
Plastic pollution is one of the most pressing environmental challenges of our time. It contaminates oceans, harms wildlife, clogs drainage systems, and degrades soil. To address this, the concept of an Eco-Friendly Plastic Recycling City has been envisioned ,a city that not only recycles waste but also leads a sustainable and healthy lifestyle

AIM

The Eco-Friendly Plastic Recycling City is a visionary concept that addresses the pressing issue of plastic pollution by creating a sustainable and healthy urban environment. This city model integrates advanced recycling facilities, waste-to-energy plants, green infrastructure, and community engagement to promote responsible plastic usage and recycling habits.

KEY FEATURES

The Eco-Friendly Plastic Recycling City has several key features that make it an innovative and sustainable urban model:



Albert Adhyayan
Class-X
PM Shri Biswambhar Bidyapitha, puri
Guide Teacher: Ashis Kumar Jena

1. Advanced Recycling Facilities: Equipped with modern machinery, these facilities efficiently recycle plastic waste, minimizing waste sent to landfills.
2. Waste-to-Energy Plants: Convert non-recyclable plastic into usable energy, reducing reliance on fossil fuels and decreasing greenhouse gas emissions.
3. Green Infrastructure: Incorporating eco-parks, rooftop gardens, and vertical plantations to combat pollution, enhance biodiversity, and improve air quality.
4. Education & Community Engagement: Implementing campaigns, school programs, and workshops to promote responsible plastic usage and recycling habits among citizens.

BENEFITS

The Eco-Friendly Plastic Recycling City offers numerous benefits, including:

1. **Reduction in Plastic Waste:** Decreasing plastic dumping into landfills and water bodies, minimizing environmental harm.
2. **Conservation of Natural Resources:** Saving raw materials and energy by reducing new plastic production, promoting resource efficiency.
3. **Employment Generation:** Creating jobs in recycling, sorting, and energy recovery sectors, stimulating local economies.
4. **Improved Public Health:** Cleaner surroundings promote wellness and enhance quality of life, reducing health risks associated with plastic pollution.

CONCLUSION

The Eco-Friendly Plastic Recycling City is a pioneering model for sustainable urban living, combining technology, awareness, and green design to create zero-waste, environmentally responsible habitats. By adopting this approach, cities can reduce plastic pollution, conserve natural resources, and promote a healthier environment for citizens. This innovative model serves as a blueprint for future urban development, inspiring a shift towards more sustainable and eco-friendly practices.

Rayagada District

Model 27

Eco-Bricks: Turning Plastic Waste into Building Blocks

INTRODUCTION

The Eco-Bricks model is an innovative approach to combat plastic pollution by reusing non-recyclable plastic waste to create strong, durable, and sustainable eco-bricks for construction. This initiative promotes sustainability, reduces plastic waste, and empowers youth with practical green skills.

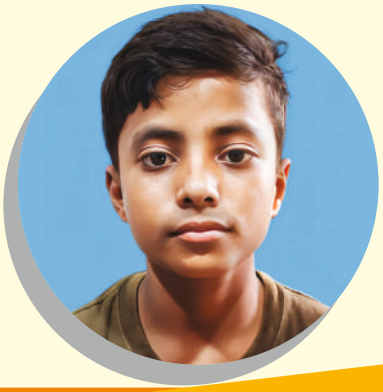
AIM

The aim of the Eco-Bricks initiative is to reduce plastic waste and promote sustainability by transforming non-recyclable plastic into eco-friendly building blocks.

OBJECTIVES

The objectives of the Eco-Bricks initiative is:

Create eco-bricks from plastic waste: Transforming non-recyclable plastic waste into strong and durable building blocks.



Ranjit Panda
Class-IX
Govt. High School, Sikarapai
Guide Teacher: Tapas Ku. Dalai

METHODOLOGY

The methodology involves the following steps:

1. **Collect household plastic waste:** Gathering non-recyclable plastic waste from households and communities.
2. **Clean and dry the waste:** Preparing the plastic waste for packing into PET bottles.
3. **Pack it tightly into used PET bottles:** Creating eco-bricks by packing plastic waste tightly into used PET bottles.

BENEFITS

The Eco-Bricks initiative offers several key benefits, including:

1. **Reducing plastic waste in the environment:** Minimizing the impact of plastic pollution on ecosystems and wildlife.
2. **Promoting recycling and reuse:** Encouraging sustainable practices & reducing waste sent to landfills.
3. **Low-cost and accessible solution:** Providing a cost-effective and accessible solution for both rural and urban communities.

Applications of Eco-Bricks:

1. **Construction:** Use eco-bricks as building blocks for walls, partitions, and other structures.
2. **Community Development:** Implement eco-bricks in community projects, such as building parks, playgrounds, and community centers.
3. **Eco-Friendly Architecture:** Incorporate eco-bricks into eco-friendly architecture designs to promote sustainable building practices.

CONCLUSION

The Eco-Bricks initiative showcases a sustainable solution for plastic pollution, promoting a cleaner and greener environment through innovative waste management and youth involvement. By transforming non-recyclable plastic waste into eco-friendly building blocks, this initiative contributes to a more sustainable future and inspires community-led initiatives to address plastic pollution.

Eco-Earn Smart Dustbin

INTRODUCTION

The Eco-Earn Smart Dustbin is an innovative solution that combines technology and gamification to encourage proper disposal of plastic waste. By rewarding users with points through the Blynk app, this smart dustbin system motivates individuals, especially students and youth, to participate in plastic waste collection and develop environmentally responsible habits.

OBJECTIVES

The objective of the Eco-Earn Smart Dustbin is to encourage plastic waste collection using a reward-based smart dustbin system connected to a mobile app.

WORKING PRINCIPLE

The Eco-Earn Smart Dustbin operates as follows:

1. **System Initialization:** The system powers on via a switch, displaying a "System Initialization" message on the LCD screen.
2. **User Prompt:** Once ready, the system prompts users to "Insert Plastic Waste".
3. **Waste Detection:** The ultrasonic sensor detects the plastic waste, triggering the servo motor to open and close the lid.

Pratignya Nag
Class-IX
Lady Lewis Girls High School
Sambalpur
Guide Teacher: Tapas Ku. Dalai

4. **Point Calculation:** Upon depositing plastic, points are calculated and displayed on the LCD screen.
5. **Notification:** A notification is sent to the user's Blynk app with the updated points, encouraging users to deposit more plastic waste to earn additional points.

BENEFITS

The Eco-Earn Smart Dustbin offers several benefits, including:

1. **Encourages Plastic Waste Collection:** The reward-based system motivates users to participate in plastic waste collection.
2. **Promotes Environmental Responsibility:** By instilling a sense of responsibility, users develop environmentally friendly habits.

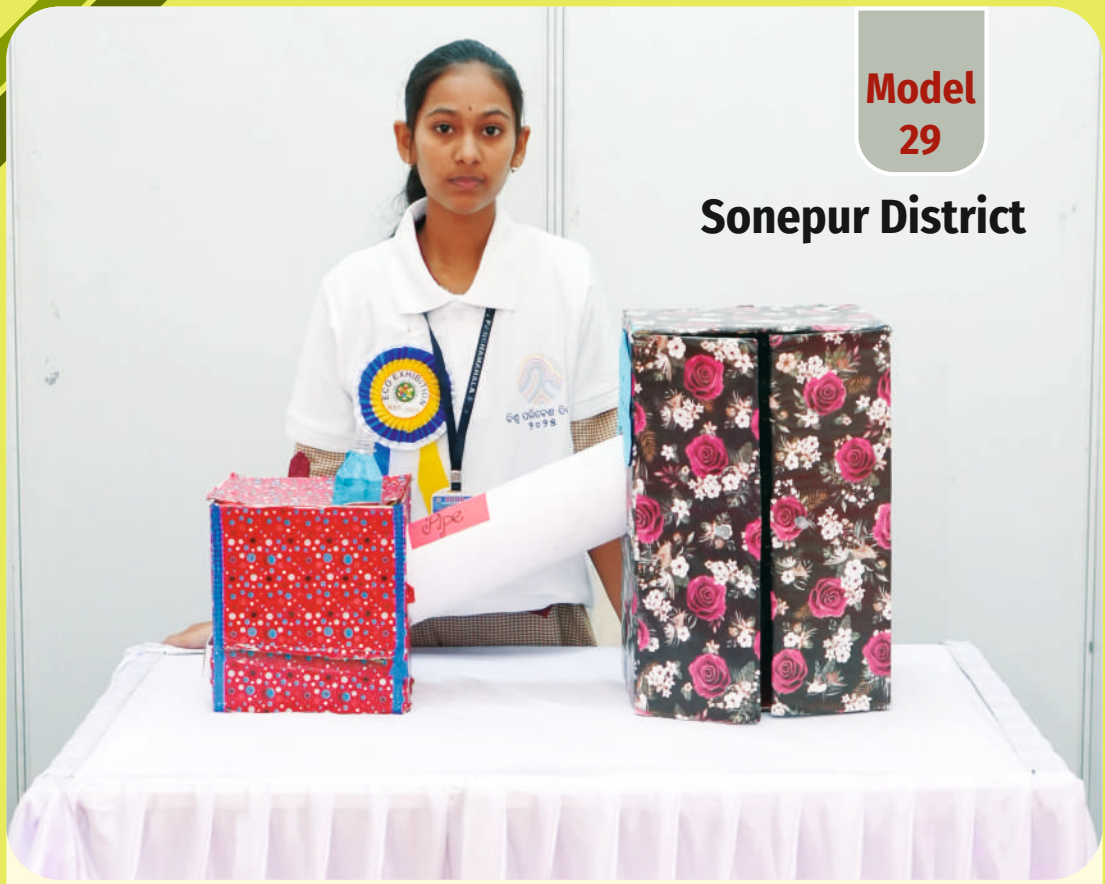
APPLICATIONS

The Eco-Earn Smart Dustbin has various applications, including:

1. **Schools and Educational Institutions:** Encouraging students to develop environmentally responsible habits.
2. **Public Spaces:** Installing smart dustbins in public spaces, such as parks and shopping malls, to promote waste management.
3. **Community Centers:** Implementing smart dustbins in community centers to foster community engagement and environmental awareness.
4. **Urban Planning:** Integrating smart dustbins into urban planning to create sustainable and efficient waste management systems.

CONCLUSION

The Eco-Earn Smart Dustbin is a creative fusion of technology, sustainability, and gamification. By encouraging plastic waste collection and promoting environmental responsibility, this innovative solution contributes to a cleaner, smarter, and greener environment. As a step towards a more sustainable future, the Eco-Earn Smart Dustbin has the potential to inspire widespread adoption of environmentally friendly practices.



Model 29

Sonepur District

Sanitary Paid Disposal Model

PROBLEM STATEMENT:

Sanitary napkins contain super absorbent polymers (SAP) that are non-biodegradable and harmful to the environment. Due to a lack of awareness and proper disposal facilities, these napkins are often discarded openly, leading to soil and water pollution and posing health risks.

OBJECTIVES

To provide a safe, hygienic, and eco-friendly method for disposing of used sanitary napkins in schools, particularly for adolescent girls, while also promoting awareness and dignity in menstrual hygiene.

MODEL OVERVIEW:

This model introduces a paid disposal system integrated into the school washroom infrastructure:

Archita Panda
Class-X
Sri Ganeswar High School
Panchamhala, Sonepur
Guide Teacher: Rohit Ku. Dandasena

DISPOSAL WINDOW:

A small disposal slot/path is attached to the window of the girls' washroom, where used sanitary napkins can be discreetly dropped.

COLLECTION CHAMBER:

The disposal path leads to an underground pit where the used napkins are temporarily stored for 2–3 days in a sealed, hygienic manner.

DESTRUCTION UNIT (INCINERATOR):

After accumulation, the napkins are transferred to a sanitary napkin incinerator.

This machine uses controlled combustion to burn the napkins safely, reducing them to sterile ash.

It eliminates harmful bacteria and reduces pollution caused by open dumping.

BENEFITS OF THE MODEL:

Environmentally Safe Disposal of non-biodegradable sanitary waste. Promotes menstrual hygiene awareness among schoolgirls. Reduces stigma and embarrassment in disposal. Minimizes contamination of soil and water.

CONCLUSION:

This model addresses both menstrual hygiene management and environmental sustainability. By integrating a smart disposal mechanism with incineration, it ensures that sanitary waste is handled responsibly, reducing long-term ecological damage.

Sundargarh District

Model 30

Controlling Plastic Pollution by Making Roads Using Plastic Waste

INTRODUCTION

The project of constructing roads using plastic waste is an innovative solution to address the severe environmental challenge of plastic pollution. By utilizing plastic waste in road construction, this project reduces pollution and promotes sustainable infrastructure development through eco-friendly and cost-effective means.

AIM

The aim of this project is to utilize plastic waste in road construction, reducing environmental pollution and promoting sustainable infrastructure development.

METHODOLOGY

The methodology involves the following steps:

1. **Collect plastic waste:** Gathering plastic waste from various sources.
2. **Clean and shred plastic:** Cleaning and shredding plastic into small pieces.
3. **Mix with bitumen:** Mixing shredded plastic with heated bitumen.
4. **Lay the mixture:** Laying the plastic-bitumen mix onto the roadbed.
5. **Compact the mixture:** Compacting the mixture to form a smooth, durable surface.

Alwin Sohit Kujur
Class-IX
Govt. (CoE) High School, Kutra
Guide Teacher: Kanha Charan Seth

BENEFITS OF PLASTIC ROADS

The benefits of using plastic waste in road construction include:

1. **Reduces plastic waste:** Decreasing the amount of plastic waste in the environment.
2. **Durable and water-resistant roads:** Roads constructed with plastic waste are more durable and resistant to water.
3. **Cost-effective:** This method is cost-effective with lower maintenance costs.
4. **Decreases dependence on natural resources:** By utilizing plastic waste, the dependence on natural resources is reduced.

APPLICATIONS

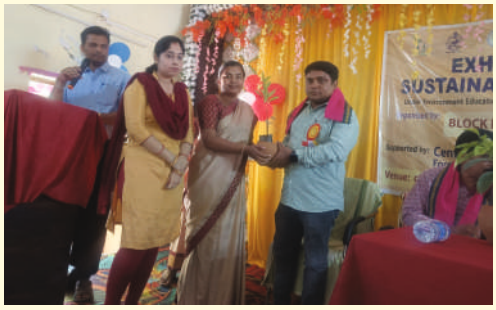
The application of plastic roads is vast, including:

1. **Rural roads:** Constructing rural roads using plastic waste can improve infrastructure and reduce maintenance costs.
2. **Highway construction:** Using plastic waste in highway construction can increase durability and reduce potholes.
3. **Urban roads:** Plastic roads can be used in urban areas to improve infrastructure and reduce environmental pollution.
4. **Disaster-prone areas:** Plastic roads can be used in disaster-prone areas to provide durable and water-resistant infrastructure.

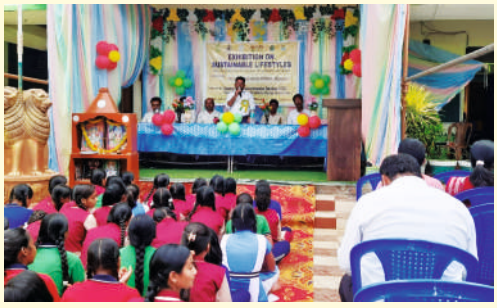
CONCLUSION

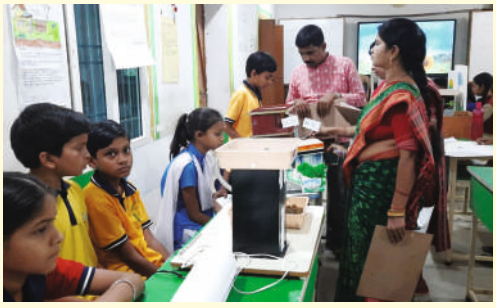
This project demonstrates the potential of innovative thinking in transforming environmental problems into sustainable solutions. By utilizing plastic waste in road construction, we can reduce pollution, improve infrastructure, and support the concept of a circular economy where waste becomes a resource. This approach has the potential to make a significant impact on the environment and promote sustainable development.

Glimpses of the Block Level Model Exhibition



Barpali Block of Bargarh District





Bijepur Block of Bargarh District

Bhadrak Block of Bhadrak District

Bhandaripokhari Block of Bhadrak District

Boudh Block of Boudh District

Kantamal Block of Boudh District

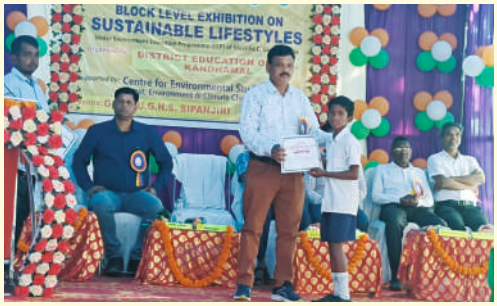
Balikuda Block of Jagatsinghpur District

Raghunathpur Block of Jagatsinghpur District

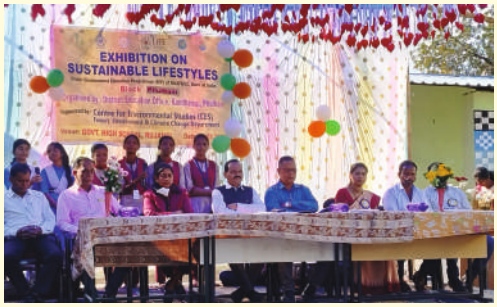
Badachana Block of Jajpur District

Danagadi Block of Jajpur District

Dharmasala Block of Jajpur District

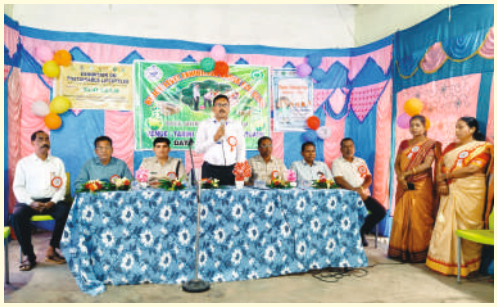


Baliguda Block of Kandhamal District



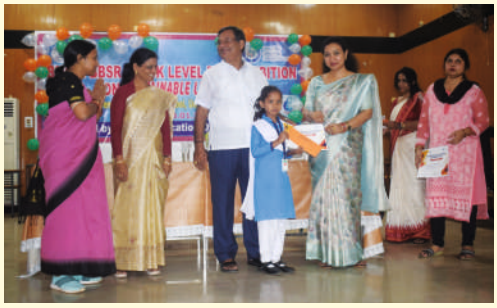
Phulabani Block of Kandhamal District

Anandpur Block of Keonjhar District



Champua Block of Keonjhar District

Balipatna Block of Khordha District

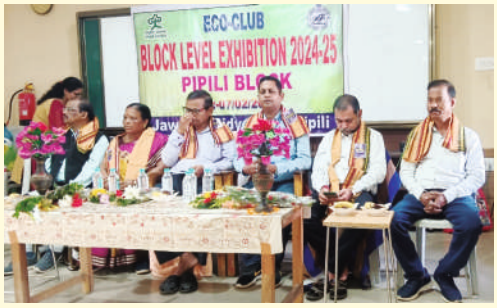


Bhubaneswar Block of Khordha District

Narayanpatna Block of Koraput District

Koraput Block of Koraput District

Puri Block of Puri District

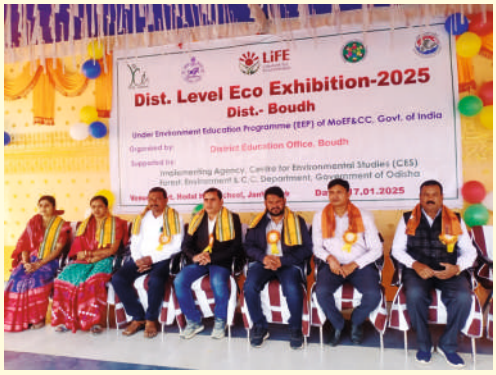


Pipili Block of Puri District

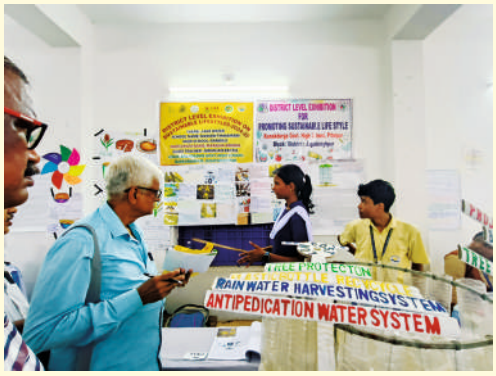
Glimpses of the District Level Model Exhibition

Bargarh District

Bhadrak District



Boudh District

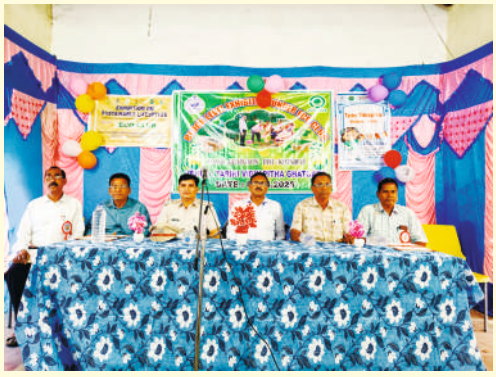


Jagatsinghpur District

Jajpur District

Kandhamal District

Kendrapara District



Keonjhar District

Khordha District

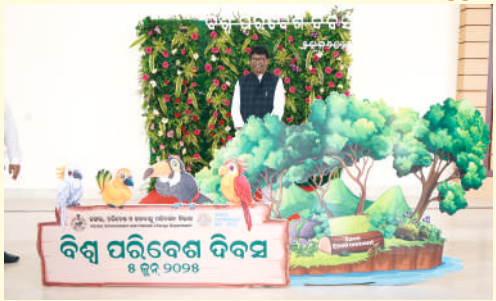
Koraput District

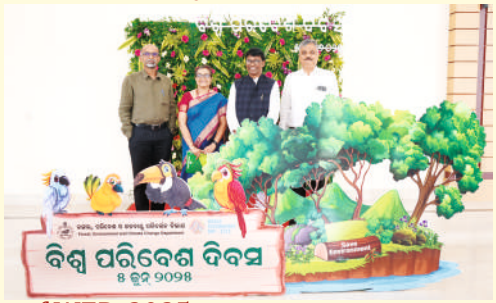
Puri District

Glimpses of the State Level WED 2025

Ek Ped Maa Ke Naam

Initiative Flagging of VARUN Ceremony





Selfie Point on the eve of WED-2025

Eco-Model Exhibition Visit

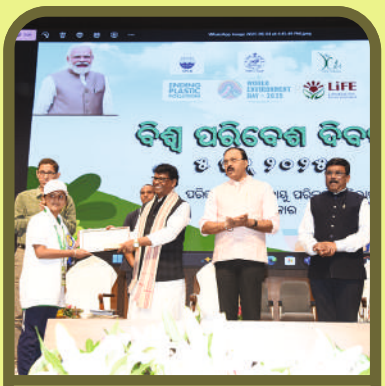
Inspirational Addresses by Esteemed Guests

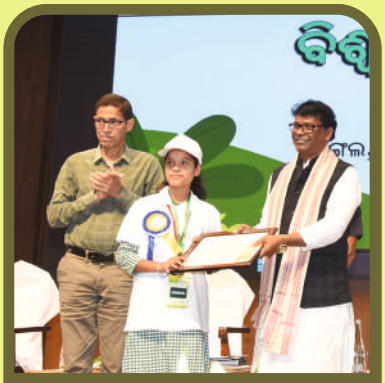
FE&CC Dept

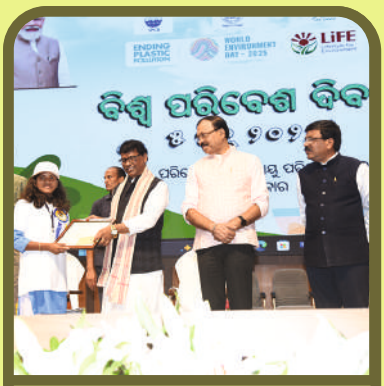
ENDING PLASTIC POLLUTION

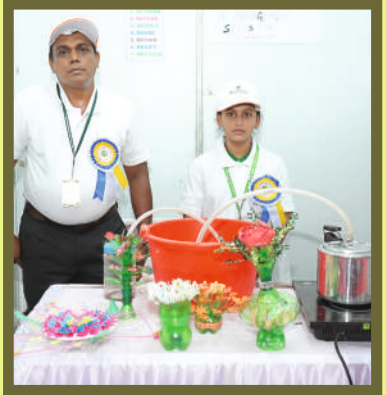
WORLD ENVIRONMENT DAY - 2025

LiFE Lifestyle for Environment









Implementing Agency-EEP:

CENTRE FOR ENVIRONMENTAL STUDIES (CES)

Department of Forest, Environment & Climate Change, Govt. of Odisha

CRP-Ekamrakanan Road, IRC Village, Bhubaneswar-751015

0674-2551853 www.cesodisha.org cesodisha@gmail.com /CESOdisha1