Project Title: “**Agricultural Waste to Energy: Ethanol-Blended Petrol for a Sustainable Bangladesh**”

Tagline: "**Fueling a Greener Future with Innovation and Impact**"

Introduction

"Driving Innovation, Fueling Sustainability"

Bangladesh faces a critical challenge in balancing its energy needs with rising fuel costs, environmental concerns, and agricultural sustainability. Our project, "Ethanol-Blended Petrol: A Cleaner and Cost-Effective Solution," offers a transformative approach to addressing these issues. By leveraging locally available resources like sugarcane, corn, and agricultural residues to produce ethanol, we propose a solution that blends 10% ethanol with 90% petrol (E10 fuel) to create a sustainable, affordable, and environmentally friendly fuel alternative.

The Problem We Address

- **Bangladesh faces rising fuel costs, dependency on imported fossil fuels, and growing agricultural waste.**

- **Urban areas suffer from air pollution, while rural areas struggle with unutilized biomass and lack of renewable energy solutions.**

- **These challenges lead to inflation, environmental degradation, and economic pressures on industries and individuals alike.**

Process Overview

1. **Raw Material Sourcing:**
   - Use surplus agricultural produce waste materials like rice straw, husks or molasses to produce ethanol.
   - Partner with local farmers and cooperatives to ensure a consistent supply of raw materials.
2. **Ethanol Production:**
   - Utilize fermentation technology to convert cellulose & starch into ethanol.
   - Employ low-cost, scalable processes to ensure production is both efficient and affordable.
3. **Blending and Distribution:**
   - Blend ethanol with petrol in a 10:90 ratio (E10 fuel).
   - Establish partnerships with fuel distributors to integrate E10 into the existing supply chain.
4. **Implementation and Use:**
   - Distribute E10 fuel to petrol stations for use in cars, motorbikes,buses and public transport.
   - Educate consumers about the benefits and compatibility of E10 fuel.

Relevance Across Hackathon Domains

1. **Agriculture:** Empowers farmers with new income streams through biomass utilization.
2. **Transport and Traffic:** Offers cleaner fuel options for vehicles, reducing air pollution and costs.
3. **Healthcare:** Improves public health by lowering pollution-related illnesses.
4. **Food Security:** Focuses on non-edible residues, avoiding competition with food crops.
5. **Inflation and Price Hike:** Mitigates rising energy costs by providing a cheaper alternative to petrol.
6. **Financial Corporation:** Opens doors to investments in renewable energy infrastructure.
7. **Environmental Sustainability** (**Others**)**:** Contributes to climate change mitigation and energy independence.

Our Solution

What We Propose:

- Harness agricultural Rice straw, husks, residues, and corn-starch to produce ethanol-blended petrol (E10 fuel).
- Convert organic waste into green energy through anaerobic digestion or pyrolysis, providing cleaner, cheaper, and renewable energy.

Why It Works:

- Utilizes existing resources in a sustainable way.
- Offers a cost-effective alternative to fossil fuels while boosting agricultural income.
- Reduces carbon emissions, improving air quality and public health.

How We Can Make It Better

1. Pilot Projects:
   - Launch small-scale production and distribution in select regions to refine the process and gather data.
   - Test E10 fuel in different vehicle types to ensure compatibility and efficiency.
2. Public-Private Partnerships:
   - Collaborate with government bodies, fuel companies, and agricultural cooperatives to scale up operations.
3. Advanced Research:
   - Explore second-generation biofuels using lignocellulosic biomass for even greater sustainability.
4. Consumer Awareness Campaigns:
   - Educate users about the benefits of E10 fuel to ensure widespread adoption.

Project Feasibility and Impact

- **Scalable:** Can be implemented locally in villages and scaled to national levels.
- **Cost-Effective:** Reduces dependency on expensive fossil fuel imports, lowering national expenditure.
- **Environmentally Friendly:** Cuts greenhouse gas emissions and promotes a circular economy.
- **Socially Inclusive:** Involves local communities, creating jobs and awareness about sustainability.

Thank You
Let’s Build a Cleaner, Greener, and Better Bangladesh Together!

Empowering communities. Driving sustainability. Fueling innovation.