```
cleantech_monitor/
├── main.py
├── calculator.py
├── visualizer.py
├── data/
│   └── emission_factors.json
├── requirements.txt
└── README.md
```

🔹 Core Code

📄 requirements.txt

```
pandas
matplotlib
```

📄 data/emission_factors.json

```
{
  "transport": {
    "car_km": 0.21,
    "bus_km": 0.05,
    "train_km": 0.041
  },
  "energy": {
    "electricity_kwh": 0.475
  },
  "food": {
    "meat_day": 7.2,
    "vegetarian_day": 3.8,
    "vegan_day": 2.9
  }
}
```

📄 calculator.py

```
import json

class FootprintCalculator:
    def _init_(self):
        with open('data/emission_factors.json') as f:
            self.factors = json.load(f)

    def calculate_transport(self, car_km=0, bus_km=0, train_km=0):
        car = car_km * self.factors['transport']['car_km']
        bus = bus_km * self.factors['transport']['bus_km']
        train = train_km * self.factors['transport']['train_km']
        return car + bus + train

    def calculate_energy(self, kwh):
        return kwh * self.factors['energy']['electricity_kwh']

    def calculate_food(self, diet_type):
        return self.factors['food'].get(diet_type, 0)
```

📄 visualizer.py

```
import matplotlib.pyplot as plt

def show_pie_chart(data_dict):
    labels = list(data_dict.keys())
    values = list(data_dict.values())
    plt.figure(figsize=(6,6))
    plt.pie(values, labels=labels, autopct='%1.1f%%', startangle=140)
    plt.title("Daily Carbon Footprint Breakdown")
    plt.show()
```

📄 main.py

```
from calculator import FootprintCalculator
from visualizer import show_pie_chart
```

```
def main():
    print("🌍 CleanTech Carbon Footprint Tracker")

    car_km = float(input("Enter km driven by car today: "))
    bus_km = float(input("Enter km traveled by bus: "))
    train_km = float(input("Enter km traveled by train: "))
    kwh = float(input("Enter electricity usage in kWh: "))
    diet = input("Diet type (meat_day / vegetarian_day / vegan_day): ")

    calc = FootprintCalculator()
    transport_emission = calc.calculate_transport(car_km, bus_km, train_km)
    energy_emission = calc.calculate_energy(kwh)
    food_emission = calc.calculate_food(diet)

    total = {
        "Transport": round(transport_emission, 2),
        "Energy": round(energy_emission, 2),
        "Food": round(food_emission, 2)
    }

    print("\nYour emissions today (kg CO₂):")
    for category, value in total.items():
        print(f"{category}: {value} kg")

    show_pie_chart(total)

if _name_ == "_main_":
    main()
```

🔹 How to Run

```
pip install -r requirements.txt
python main.py
```
