**Phase -1**

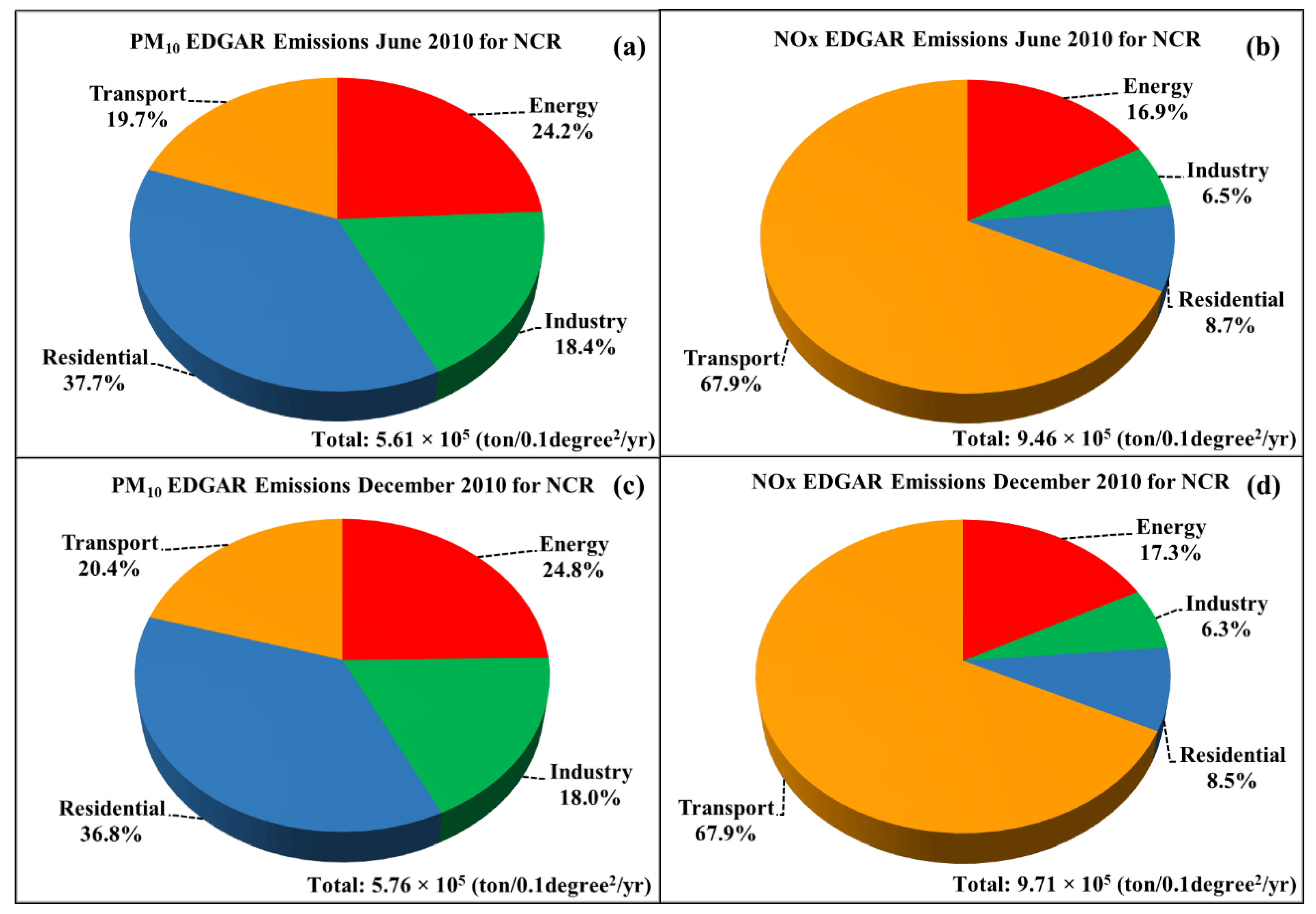
**Design Thinking:**

* **Step 1:** Install air quality monitoring stations: Set up air quality monitoring stations in key locations throughout Tamil Nadu. These stations should measure various air pollutants, including particulate matter (PM2.5 and PM10), nitrogen dioxide (NO2), sulfur dioxide (SO2), carbon monoxide (CO), ozone (O3), and volatile organic compounds (VOCs).
* **Step 2:** Gather meteorological data: Collect meteorological data such as temperature, humidity, wind speed, and wind direction, which can influence air quality.
* **Step 3:** Continuous monitoring: Continuously collect data from the monitoring stations and update the database.
* **Step 4:** Data preprocessing: Clean and preprocess the collected data to remove outliers, missing values, and errors.
* **Step 5:** Data aggregation: Aggregate data over time (e.g., hourly or daily averages) and by location to create a comprehensive dataset.
* **Step 6:** Air quality index (AQI) calculation: Calculate the AQI for each monitoring station based on pollutant concentrations. Use the standard AQI formula recommended by relevant authorities, which often considers pollutant-specific sub-indices.
* **Step 7:** Spatial analysis: Analyze the spatial distribution of air quality across Tamil Nadu. Use geographic information systems (GIS) tools to create maps and visualize the data.
* **Step 8:** Temporal analysis: Analyze trends and variations in air quality over time. Look for seasonal patterns, daily fluctuations, and long-term trends.
* **Step 9:** Identify pollution sources: Investigate potential sources of pollution by analyzing the data in conjunction with local industrial and traffic information.

**Ambient Air Quality Monitoring Stations:**

|  |  |  |  |
| --- | --- | --- | --- |
| Sino | Station Location | | Land Use Zone / Area |
| 1 | | Thinner | Residential zone |
| 2 | | Main Guard Gate | I Traffic intersection |
| 3 | | Bishop Heber College | Sensitive zone |
| 4 | | Golden rock | Residential zone |
| 5 | | Central bus stand | Traffic intersection |

**High pollution levels:**

****