**Innovation of Air quality monitoring system:**

**Miniaturized Sensors:** Advancements in sensor technology have led to smaller, more affordable air quality sensors, enabling their integration into various devices and locations.

**Data Analytics**: IoT systems now employ advanced data analytics and machine learning algorithms to process vast amounts of data in real-time. This allows for more accurate monitoring and prediction of air quality trends.

**Wireless Connectivity**: IoT devices now use low-power, wide-area networks (LPWAN) like LoRaWAN and NB-IoT, ensuring efficient, long-range communication between devices and data collection hubs

**Cloud Integration**: Data collected from IoT sensors can be stored and processed in the cloud, allowing for remote monitoring, analysis, and accessibility from anywhere in the world.

**User Engagement**: Innovations in user interfaces, including mobile apps and web platforms, make it easier for individuals and communities to access and understand air quality data. This promotes awareness and encourages proactive measures.

**Integration with Smart Devices**: IoT air quality systems can integrate with smart devices such as thermostats and air purifiers. When air quality deteriorates, these devices can adjust settings automatically to improve indoor air quality.

**Environmental Impact Assessment:** IoT systems are used for environmental impact assessment in urban planning, helping to design cities in a way that minimizes pollution and enhances overall air quality.

**Collaborative Networks:** Collaborative efforts between governments, researchers, and private companies have led to the development of comprehensive air quality monitoring networks, providing more accurate and widespread data

These innovations are crucial for addressing air pollution challenges, enabling informed decision-making, and promoting healthier living environments.