

SL No	Element / Component Name	Sensor / Item Name
<b>RefinAir Device Price</b>		
1	Temperature	BME280
2	Humidity	
3	Barometric Pressure	
4	PM1.0	PMS5003
5	PM2.5	
6	PM10	
7	Carbon Dioxide (CO <sub>2</sub> )	MH-Z19B NDIR CO <sub>2</sub> Module
8	Nitrogen Dioxide (NO <sub>2</sub> )	Grove Multichannel Gas Sensor V2
9	Total Volatile Organic Compounds (TVOC)	
10	Carbon Monoxide (CO)	Gravity: Analog Carbon Monoxide Sensor
11	Microcontroller Board	Arduino Mega 2560 WiFi Board
12	GPS	U-Blox NEO-6M GPS Module
13	Data Storage	Arduino SD Card Module
14	Wiring	Cables and board
<b>Communication &amp; Power</b>		
16	Communication	4G WiFi Router Modem
17	Solar Power	Solar Charging Power Supply with solar panel
18	Battery	Lipo Battery 3300mAh 11.1V 3S

Item Description	Unit Price
BME280 is a Breakout Board featuring a Bosch Sensortec ME280 Temperature, Humidity & Pressure Sensor.	₹ 700.00
PMS5003 is a kind of digital and universal particle concentration sensor, which can be used to obtain the number of suspended particles in the air, i.e. the concentration of particles, and output them in the form of digital interface.	₹ 2,700.00
The MH-Z19B NDIR infrared gas module detects the presence of CO <sub>2</sub> in the air using the non-dispersive infrared (NDIR) principle.	₹ 2,800.00
Grove Multichannel Gas Sensor V2 uses MEMS technology to detect a variety of gases like Carbon monoxide (CO), Nitrogen dioxide (NO <sub>2</sub> ), Ethyl alcohol(C <sub>2</sub> H <sub>5</sub> CH), Volatile Organic Compounds (VOC) and etc.	₹ 5,500.00
This is a CO sensor. It detects carbon monoxide (CO) concentrations in the air between 20 and 2000ppm using the MQ7 probe.	₹ 1,550.00
It is a development board using the Atmega2560 microcontroller. It has a built in WiFi module incorporated with it.	₹ 1,200.00
The NEO-6M GPS module is a well-performing complete GPS receiver with a built-in 25 x 25 x 4mm ceramic antenna, which provides a strong satellite search capability and accurate GPS coordinates.	₹ 900.00
It stores data into SD card from arduino development board.	₹ 300.00
	₹ 500.00
Provide internet through WiFi to send data from the device to the cloud	₹ 1,400.00
It charges the battery using the solar panel	₹ 2,500.00
It powers the device.	₹ 2,400.00
<b>Total:</b>	<b>₹ 22,450.00</b>

SL No	Element / Component Name	Sensor / Item Name
AirVisual Pro Device		
1	PM1.0	IQAir Visual Pro
2	PM2.5	
3	PM10	
4	Temperature	
5	Humidity	
6	Carbon Dioxide (CO2)	
Additional Sensor & Components		
7	Nitrogen Dioxide (NO <sub>2</sub> )	Grove Multichannel Gas Sensor V2
8	Total Volatile Organic Compounds (TVOC)	
10	Carbon Monoxide (CO)	Gravity: Analog Carbon Monoxide Sensor
11	Microcontroller Board	Arduino Mega 2560 WiFi Board
12	GPS	U-Blox NEO-6M GPS Module
13	Data Storage	Arduino SD Card Module
14	Wiring	Cables and board
Communication & Power		
16	Communication	4G WiFi Router Modem
17	Solar Power	Solar Charging Power Supply with solar panel
18	Battery	Lipo Battery 3300mAh 11.1V 3S

Item Description	Unit Price
Air Quality monitoring device.	₹ 28,000.00
Grove Multichannel Gas Sensor V2 uses MEMS technology to detect a variety of gases like Carbon monoxide (CO)	₹ 5,500.00
This is a CO sensor. It detects carbon monoxide (CO) concentrations in the air between 20 and 2000ppm using the MQ7 probe.	₹ 1,550.00
It is a development board using the Atmega2560 microcontroller. It has a built in WiFi module incorporated with it.	₹ 1,200.00
The NEO-6M GPS module is a well-performing complete GPS receiver with a built-in 25 x 25 x 4mm ceramic antenna, which provides a strong satellite search capability and accurate GPS coordinates.	₹ 900.00
It stores data into SD card from arduino development board.	₹ 300.00
	₹ 300.00
Provide internet through WiFi to send data from the device to the cloud	₹ 1,400.00
It charges the battery using the solar panel	₹ 2,500.00
It powers the device.	₹ 2,400.00
<b>Total:</b>	<b>₹ 44,050.00</b>

Research and Development Staff Cost For Prediction Model					
SL No	Position	Base Cost	No. of Staff	Hours of Work	Total Cost
1	Professor	₹ 2,800.00	1	50	₹ 140,000.00
2	Associate Professor	₹ 2,500.00	1	70	₹ 175,000.00
3	Lecturer	₹ 1,700.00	1	10	₹ 17,000.00
4	Junior Lecturer	₹ 1,350.00	1	70	₹ 94,500.00
5	R&D Officer	₹ 1,350.00	1	60	₹ 81,000.00
6	Research Assistant	₹ 100.00	2	720	₹ 144,000.00
				Total:	₹ 651,500.00

Alternate 1		
<b>IoT Devices</b>		
	<b>No. of Devices</b>	<b>Per Device Cost</b>
District-Wise Monitoring	64 x AirVisual Pro	₹ 44,050.00
Power Station & Surrounding Area Monitoring	755 x AirVisual Pro	₹ 44,050.00
Transportation Route		
i. National	197 x AirVisual Pro	₹ 44,050.00
ii. Dhaka City	57 x AirVisual Pro	₹ 44,050.00
<b>Sub Total :</b>		<b>₹ 47,265,650.00</b>
<b>Web Development</b>		
<b>Web Development Fee</b>		<b>₹ 30,000.00</b>
<b>Sub Total :</b>		<b>₹ 30,000.00</b>
<b>Cloud Service</b>		
	<b>Monthly Cost</b>	<b>Yearly</b>
Azure IoT Hub	₹ 2,133.00	₹ 25,596.00
Azure IoT Edge	₹ 0.00	₹ 0.00
Notification Hubs	₹ 853.20	₹ 10,238.40
Azure Maps	₹ 0.00	₹ 0.00
App Service	₹ 7,998.75	₹ 95,985.00
Azure Machine Learning	₹ 0.00	₹ 0.00
<b>Yearly Sub Total :</b>		<b>₹ 131,819.40</b>
<b>Research and Development</b>		
Prediction Model R&D Staff Costing		₹ 0.00
<b>Sub Total :</b>		<b>₹ 0.00</b>
<b>System Maintenance</b>		
	<b>Yearly Salary</b>	
IoT Maintenance Engineer	₹ 360,000.00	
Web Application Maintenance Engineer	₹ 360,000.00	
Cloud Maintenance Engineer	₹ 360,000.00	
<b>Yearly Sub Total :</b>		<b>₹ 1,080,000.00</b>
<b>Total :</b>		<b>₹ 48,507,469.40</b>

Alternate Cost Estimation Scenario				
	Alternate 2			
Total Cost	No. of Devices	Per Device Cost	Total Cost	No. of Devices
₹ 2,819,200.00	64 x RefinAir	₹ 22,450.00	₹ 1,436,800.00	16 x RefinAir
₹ 33,257,750.00	755 x RefinAir	₹ 22,450.00	₹ 16,949,750.00	189 x RefinAir
₹ 8,677,850.00	197 x RefinAir	₹ 22,450.00	₹ 4,422,650.00	50 x RefinAir
₹ 2,510,850.00	57 x RefinAir	₹ 22,450.00	₹ 1,279,650.00	15 x RefinAir
	₹ 24,088,850.00			
₹ 30,000.00				
	₹ 30,000.00			
Cost	Monthly Cost	Yearly Cost		Month
36.00	₹ 2,133.00	₹ 25,596.00		₹ 0
00	₹ 0.00	₹ 0.00		₹ 0
38.40	₹ 853.20	₹ 10,238.40		₹ 8
00	₹ 0.00	₹ 0.00		₹ 0
35.00	₹ 7,998.75	₹ 95,985.00		₹ 7,9
00	₹ 0.00	₹ 0.00		₹ 2,6
	₹ 131,819.40			
	₹ 0.00			
	₹ 0.00			
	Yearly Salary			
	₹ 360,000.00			
	₹ 360,000.00			
	₹ 360,000.00			
	₹ 1,080,000.00			
	₹ 25,330,669.40			

Alternate 3	
Per Device Cost	Total Cost
₹ 22,450.00	359,200.00₹
₹ 22,450.00	4,243,050.00₹
₹ 22,450.00	1,122,500.00₹
₹ 22,450.00	336,750.00₹
₹ 6,061,500.00	
₹ 30,000.00	
₹ 30,000.00	
Monthly Cost	Yearly Cost
0.00	₹ 0.00
0.00	₹ 0.00
53.20	₹ 853.20
0.00	₹ 0.00
998.75	₹ 95,985.00
395.25	₹ 32,103.00
₹ 128,941.20	
₹ 651,500.00	
₹ 651,500.00	
Yearly Salary	
₹ 360,000.00	
₹ 360,000.00	
₹ 360,000.00	
₹ 1,080,000.00	
₹ 7,951,941.20	