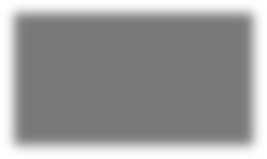
ENVIRONMENTAL MONITORING USING IOT

**PHASE 3:** INNOVATION

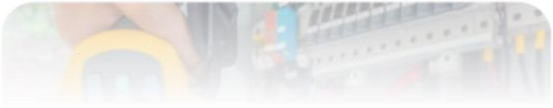


# Environmental monitoring

**INTRODUCTION :**

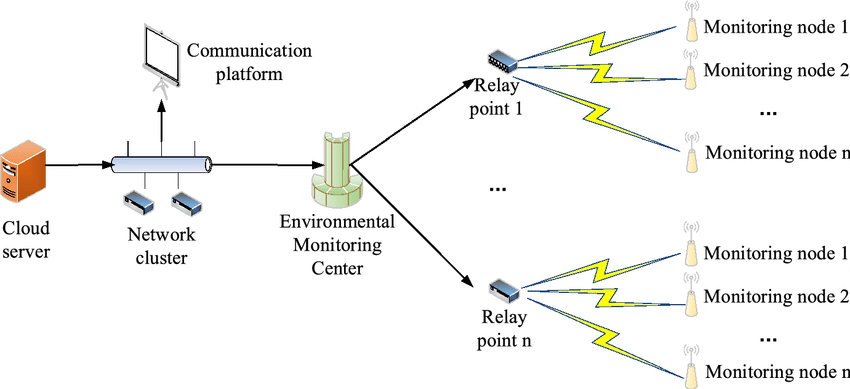
Environmental monitoring refers to the process of tracking and assessing various aspects of the natural environment to understand changes, trends, and potential impacts on ecosystems, human health, and the planet as a whole. It involves the collection, analysis, and interpretation of data related to air, water, soil, and other environmental factors.

Environmental monitoring is crucial for several reasons:



**Leak Detection Systems Techniques of Environmental Monitoring**

# CIRCUIT DIAGRAM



STEPS FOR FLOWCHART

**STEP 1** : Start

**STEP 2 :** Define Monitoring Objectives

**STEP 3** : Select Environmental Parameters to Monitor

**STEP4** :. Choose Monitoring Locations **STEP5** :. Deploy Monitoring Equipment **STEP6** :. Data Collection and Measurement

**STEP7** : Data Transmission (if remote monitoring)

**STEP8** : Data Storage and Management

**STEP9** : Data Analysis

**STEP10** : Interpretation and Reporting

**STEP11** : Decision-Making

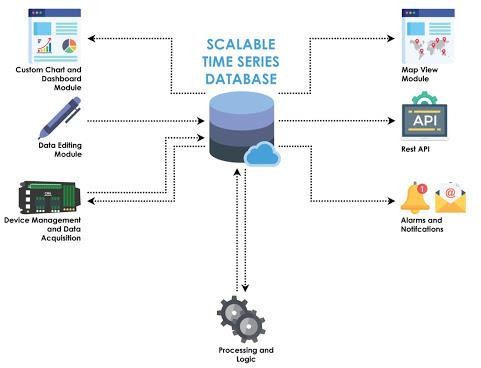
**STEP12** : Implement Mitigation Measures (if necessary)

**STEP13** : Regulatory Compliance

**STEP14 :** Public Communication and Awareness

**STEP15 :** End

FLOWCHART



# Python Script For Environmental Monitoring

#include <WiFi.h> #include "DHTesp.h" #include "ThingSpeak.h" const int DHT\_PIN = 15; const int LED\_PIN = 13;

const char\* WIFI\_NAME = "Wokwi-GUEST"; const char\* WIFI\_PASSWORD = "";

const int myChannelNumber =2307358 ;

const char\* myApiKey = "1U2N21SZEGP74GFZ"; const char\* server = "api.thingspeak.com"; DHTesp dhtSensor;

WiFiClient client; void setup() {

Serial.begin(115200);

dhtSensor.setup(DHT\_PIN, DHTesp::DHT22); pinMode(LED\_PIN, OUTPUT); WiFi.begin(WIFI\_NAME, WIFI\_PASSWORD);

while (WiFi.status() != WL\_CONNECTED){ delay(1000);

Serial.println("Wifi not connected");

}

Serial.println("Wifi connected !"); Serial.println("Local IP: " + String(WiFi.localIP())); WiFi.mode(WIFI\_STA); ThingSpeak.begin(client);

}

void loop() {

TempAndHumidity data = dhtSensor.getTempAndHumidity(); ThingSpeak.setField(1,data.temperature); ThingSpeak.setField(2,data.humidity);

if (data.temperature > 35 || data.temperature < 12 || data.humidity > 70 || data.humidity < 40) {

digitalWrite(LED\_PIN, HIGH);

}else{

digitalWrite(LED\_PIN, LOW);

}

int x = ThingSpeak.writeFields(myChannelNumber,myApiKey); Serial.println("Temp: " + String(data.temperature, 2) + "°C"); Serial.println("Humidity: " + String(data.humidity, 1) + "%"); if(x == 200){

Serial.println("Data pushed successfull");

}else{

Serial.println("Push error" + String(x));

}

Serial.println("---"); delay(10000);

}

# OUTPUT

---

Temp: 38.70°C

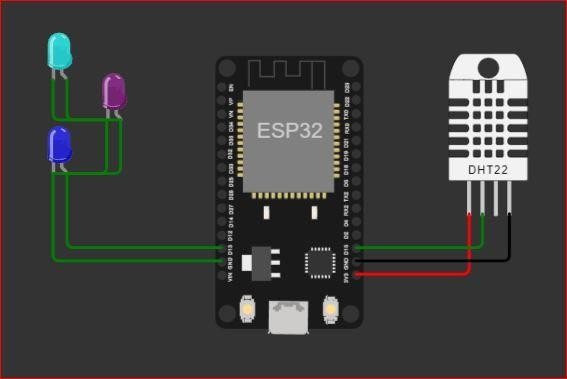
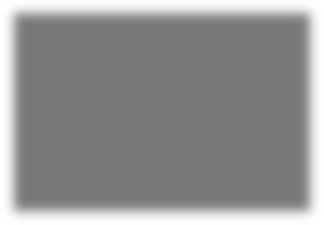
Humidity: 65.5% Push error-401

---

Temp: 38.70°C

Humidity: 65.5%

Data pushed successfull



**CONCLUSION :**

Environmental monitoring is a multidisciplinary field that involves collaboration between scientists, government agencies, environmental organizations, and the private sector. It plays a crucial role in addressing pressing environmental challenges and promoting the sustainable management of natural resources.