

Sana Zarwania

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Research Interests

I am passionate about addressing **air pollution and climate change** through innovative research, focusing on the **quantification of emissions** and the use of **geospatial technologies**. My interests include exploring the dynamics of **atmospheric pollutants, greenhouse gas cycles**, and their impacts on public health and ecosystems. I aim to leverage **GIS, remote sensing, and environmental modelling** to develop data-driven solutions for **air quality management, climate mitigation, and sustainable environmental policy**, ultimately contributing to more effective climate policy and environmental stewardship.

Previous research experience

MS Research:

Quantification of Agricultural Emission: A Comprehensive Emission Inventory of Crop Residue Open Burning in Pakistan (2010-2021):

This study presents an extensive emission inventory of major air pollutants resulting from crop residue burning in Pakistan over a 12-year period, addressing the critical need for accurate air quality data.

Utilizing **MODIS active fire data** combined with district-level crop production statistics, the research achieved high-resolution spatial and temporal distribution of emissions.

Education

National University of Science and Technology (NUST)	Islamabad, Pakistan
Master of Science- Environmental Sciences: CGPA: 3.63/4.00	2021- 2024

Quaid-i-Azam University (QAU) Ranked #1 University in Pakistan (link)	Islamabad, Pakistan
Bachelor of Science (Honors) - Environmental sciences: CGPA: 3.4/4.00	2010-2020

Major Courses

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|---|-------------------------------|
| ▪ GIS and Remote sensing | ▪ Earth sciences |
| ▪ Carbon sequestration | ▪ Natural resource management |
| ▪ Climate Change Adaptation and Environment | ▪ Energy and environment |
| ▪ Agrochemicals in the environment | ▪ Biodiversity conservation |
| ▪ Environmental pollution | ▪ Research Methodologies in |
| ▪ Soil and environment | Environmental science |

Certifications and Awards

- **International Conference on Gender, Intersectionality, and Climate Change (GICC)** – Certificate of participation (24th -25thSeptember, 2024)
- **ECO CODE'23** by Green Youth Movement (GYM) and NUST Environment Club (NEC) – Certificate of participation (16th May,2023)
- **2nd International Conference on Water, Energy & Environment for Sustainability (IC-WEES)** – Certificate of appreciation (17th -18thAugust, 2022)

- **Climate Action Panel Talk** by E-Hands in collaboration with Lincoln's Corner Pakistan – Certificate of participation (1st April, 2022)
 - **Model Designing Project – "KNOW YOUR HOME"** – Certificate of Excellence (15th Jan 2019)
 - **Ministry of Climate Change Volunteer Activity** – Certificate of participation (Feb-Apr 2018)
 - **Young Leaders' Summit (16th Edition)** – Certificate of participation (11th March, 2018)
 - **Indigenous Entrepreneurship Conference IV** – Certificate of participation (17th March, 2018)
 - **International Eco-Internship** by WWF – Certificate of completion (July-Aug 2018)
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Professional Experience

Climate Action Fellowship with NYCCC-Native Youth Club for Climate Change

(July 2024-September 2024)

- Completed a rigorous virtual fellowship on climate change, with a focus on critical topics including climate science, adaptation strategies, mitigation techniques, climate finance, and climate justice.
- Engaged in interactive tasks and assessments, developing a comprehensive understanding of climate challenges and strategies, particularly in the context of Pakistan.
- Collaborated with fellow participants to propose solutions for pressing environmental issues, enhancing skills in climate planning and policy development.

Member NEC- Nust Environment Club

October 2021- May 2022

- Worked as an executive member of a branch of NEC called Ductus Exemplo
- The core aim of this group was to create awareness among school children and other community members about climate change vulnerability of Pakistan.
- We paid educational Visits to local schools and orphanages in Islamabad/ Rawalpindi during the six-month tenure.

Eco Internship - WWF (World Wildlife Fund)

July 2018 – Aug 2018

- Worked on the **waste segregation** (mainly plastic; how the waste is generated, dumped and collected?)
- Developed a questionnaire to conduct a small-scale survey and visited several local parks and public schools to check the common people's awareness about the pressing problem of waste management.
- Utilized different charts, models and other illustrations to present the concept of waste segregation to city park managers and school students.
- Presented results to the WWF panel.

Voluntary Campaign - Ministry of Climate Change, Pakistan

Feb 2018- April 2018

- Participated in a door-to-door plantation campaign launched by ministry of climate change Pakistan.
- Distributed plants in different areas/sectors of Islamabad city.
- The purpose of this plantation activity was to alert the public about the increasing climate change vulnerability of Pakistan.

Community Work - Make Ambition & Join Us

- Worked with a youth volunteer organization.

- The organization works on small scale community-based projects like raising charity, educating street children, and feeding the impoverished people.
- The objectives of this group also include organizing awareness campaigns/events to bring issues like climate change and waste management to people's attention.
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Tools, Software, and Professional Skills

- Proficient in geospatial data analysis and processing with ArcGIS software
- Experienced in remote sensing and spatial analysis using Erdas Imagine
- Proficient in Microsoft Office (Word, Excel, PowerPoint)
- Skilled in environmental data analysis
- Experienced in designing and developing research questionnaires
- Competent in research and technical writing
- Adept at project management and collaboration
- Familiar with web development fundamentals
- Strong public speaking and presentation skills

Other Interests

- Reading books on science, environment, and history
- Traveling and photography, exploring natural landscapes
- Writing articles and blogs on environmental issues
- Creating and editing videos for vlogs and social media content